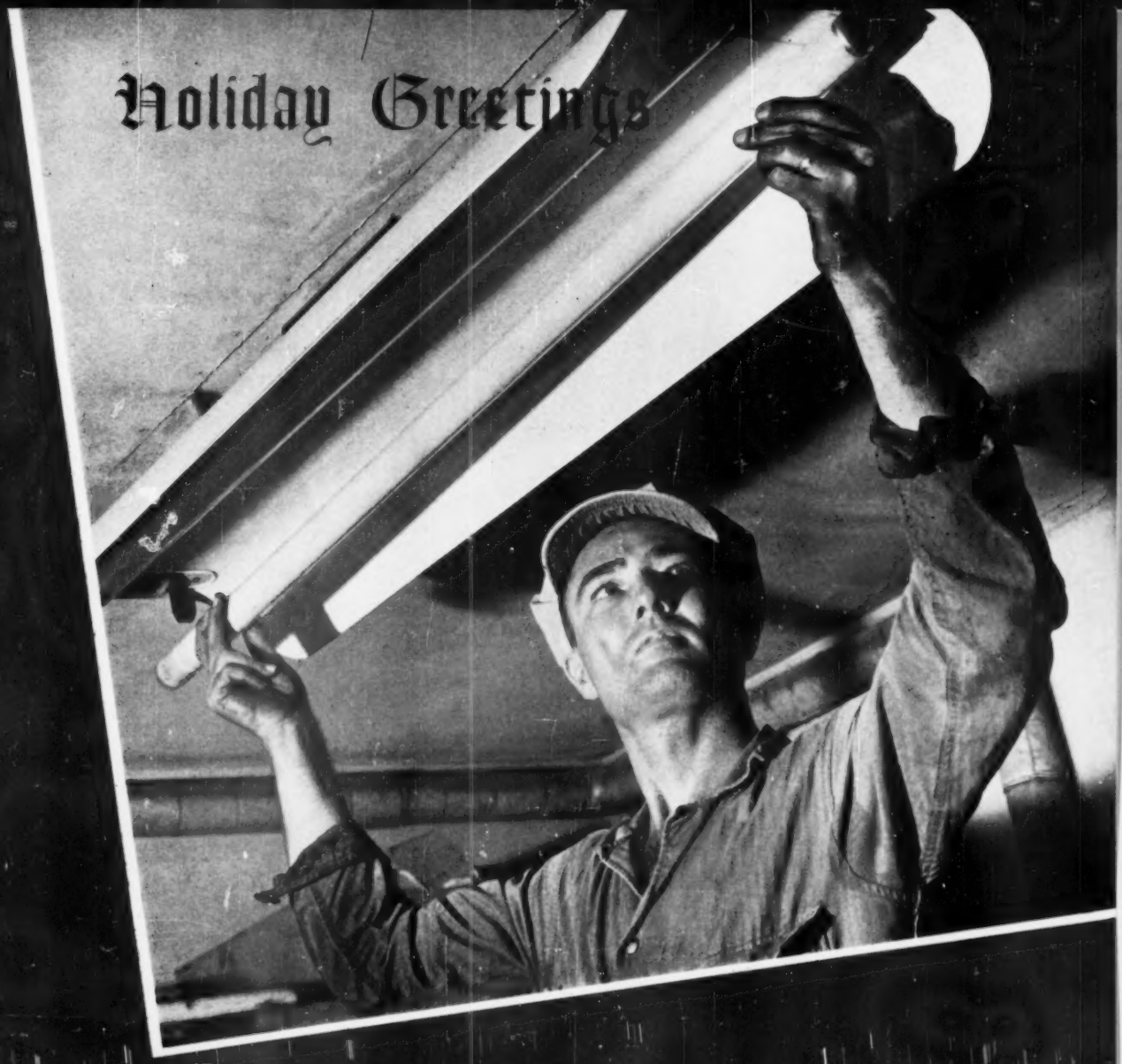

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DECEMBER, 1952

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NEW AO SPAT with special flare

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OUTSIDE VIEW

INSIDE VIEW

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SAFETY PRODUCTS DIVISION

The SAFETY ZONE

Keep your workers in the Safety Zone with AO Safety Equipment

SOUTHBRIDGE, MASSACHUSETTS • BRANCHES IN PRINCIPAL CITIES

(For further details, use Key # M-1 on free Inquiry Card on page 73)

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NEW!
VISOR-CHEM

With Screen Port Ventilation

- STOPS CHEMICAL SPLASHES
- ULTRA VIOLET ABSORBING LENSES

EXCLUSIVE FEATURES

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- NO STRUTS or frame to obstruct vision

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JONES FULL VISION VISOR GOGGLES

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(METHYL-METHACRYLATE)

Ski Goggles
Safety Goggles
Sun Goggles

JONES AND COMPANY · 125 CATLIN AVE. · RUMFORD, RHODE ISLAND

(For further details, use Key # M-2 on free Inquiry Card on page 73)

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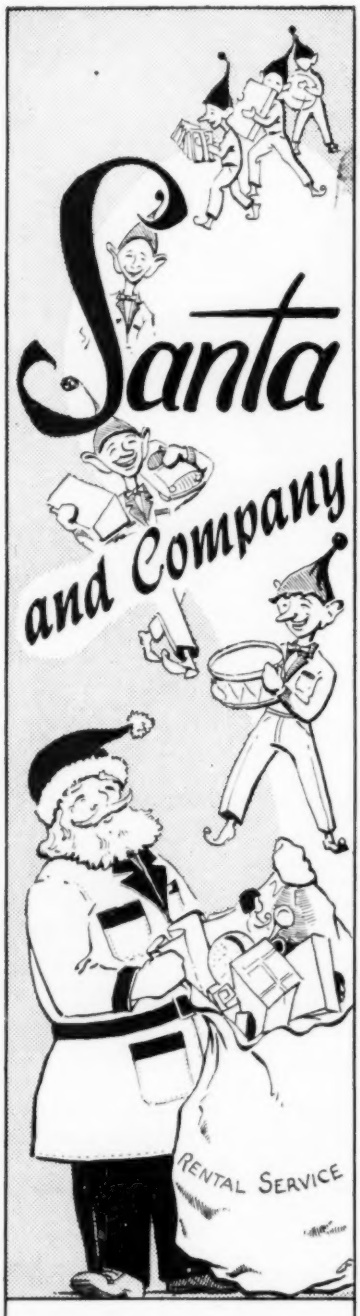

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(Use Key # M-3 on Inquiry Card on page 73)

THE Future SHOWS

Milwaukee, Wis. *Jan. 18–19*

Twelfth Annual Mid-Winter Wisconsin Safety Conference & Exposition (Hotel Schroeder).

Chicago, Ill. *Jan. 25–28*

Plant Maintenance & Engineering Show (International Amphitheater). Clapp & Poliak, Inc., 341 Madison Ave., New York 17, N. Y.

Dayton, Ohio *Feb. 10*

Second Annual Miami Valley Safety Conference (Biltmore Hotel). Marvin Purk, Dayton Chamber of Commerce, Biltmore Hotel, Dayton 2, Ohio.

Louisville, Ky. *March 7–9*

Southern Safety Conference & Exposition (Kentucky Hotel). W. L. Groth, Executive Director, P. O. Box 8927, Richmond 25, Va.

Philadelphia, Pa. *March 10–11*

Twentieth Annual Philadelphia Regional Safety and Fire Conference and Exhibit (Bellevue-Stratford Hotel). Walter W. Matthews, Managing Director, Philadelphia Chamber of Commerce Safety Council, Architects Building, 17th and Samson Streets, Philadelphia 3, Pa.

Indianapolis, Ind. *March 17–18*

Seventh Annual Central Indiana Safety Conference and Exhibit (Claypool Hotel). Indianapolis Safety Council, 320 North Meridian St., Indianapolis 11, Ind.

Dallas, Texas *March 29–30*

Fifteenth Annual Texas Safety Conference (Baker Hotel). E. B. Tilley, Texas Safety Association, Inc., 830 Littlefield Bldg., Austin, Texas.

Pittsburgh, Pa. *March 30–31*

Twenty-ninth Annual Western Pennsylvania Safety Conference and Exhibition (Hotel William Penn). Harry H. Brainerd, Executive Manager, Western Pennsylvania Safety Council, 605 Park Bldg., Pittsburgh 22, Pa.

New York, N. Y. *April 6–9*

Twenty-fourth Greater New York Safety Convention and Exposition (Hotel Statler). George E. Decker, Lincoln Building, 60 East 42nd St., New York 17, N. Y.

Charleston, W. Va. *April 14–16*

Twentieth Annual West Virginia Safety Conference. Charles Hopkins, West Virginia Safety Council, 316-17 Masonic Office Bldg., Charleston, W. Va.

Detroit, Mich. *April 26–28*

Michigan State Safety Conference (Sheraton Cadillac Hotel). Jerry Moore, executive secretary, Corporate Service, Inc., Detroit, Michigan.

Raleigh, North Carolina *May 4–6*

Twenty-fourth Annual North Carolina Statewide Industrial Safety Conference (Sir Walter Hotel). H. S. Baucom, Safety Director, North Carolina Industrial Commission, Raleigh, North Carolina.

Baltimore, Md. *May 6–7*

Annual Governor's Safety-Health Conference & Exhibit (Lord Baltimore Hotel). Joseph A. Haller, Safety Director, State Industrial Accident Commission, Equitable Bldg., Baltimore 2, Md.

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MORE EFFECTIVE... MORE DEPENDABLE

FIRE-STOPPING POWER

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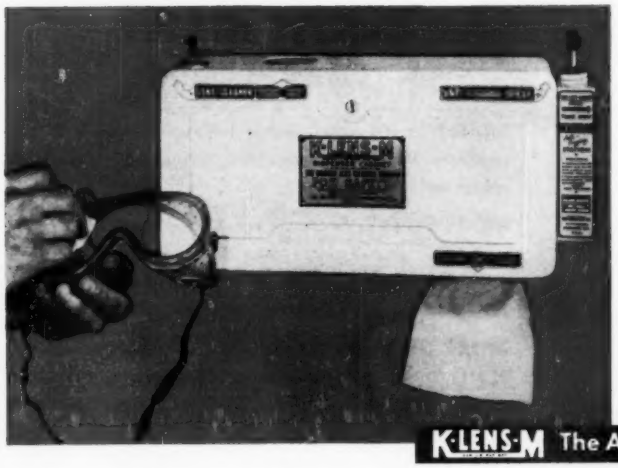
(For further details, use Key # M-4 on free Inquiry Card on page 73)

Every time your workers stop to clear fog from their safety eye wear;
Every time safety goggles are perched uselessly on caps;
Every time a lens is scratched in cleaning;
—It costs you money.



You can eliminate this cost with K-LENS-M Liquid Method of lens cleaning. Fog that interferes with vision can steal production time all along the line wherever there is humidity, body heat or temperature extremes. K-LENS-M Lens Cleaner and K-LENS-M Anti-Fogging Liquid have proved for more than a decade to be the most effective and most economical way to combat this loss.

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SAFETY MAINTENANCE & PRODUCTION

FORMERLY "SAFETY ENGINEERING"

EST. 1901

VOL. 106, NO. 6 **DECEMBER, 1953**

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Our Thanks for the Courtesy
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AMERICA'S PIONEER MAGAZINE IN ITS FIELD

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of course

Fourth of Five

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21–18–15–12–9 Iron

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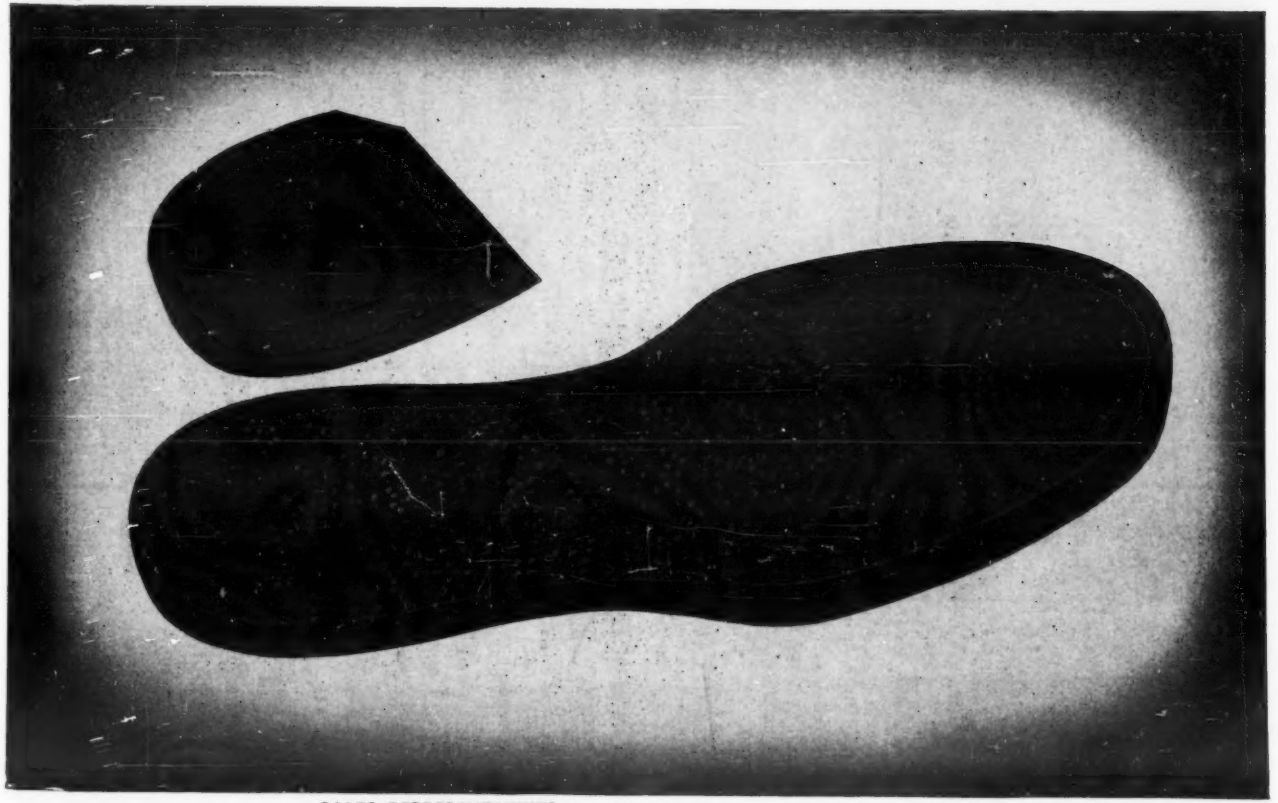

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At the tool crib, he picks up his box of Scott Industrial Wipers . . . keeps it next to his machine all day long. Each Scott Wiper is double-ply, strong, and absorbent—designed for the entire range of industrial wiping

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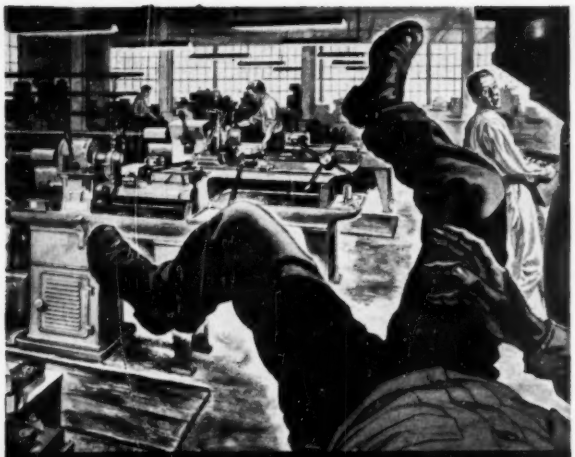
SCOTT PAPER COMPANY

(For further details, use Key # M-7 on free Inquiry Card on page 731



. . . Then **ALGRIP** Banished Slipping Accidents and Pared the Company's High Insurance Rates!

Take a machine tool, surround it with oil-filmed flooring, and you've set the stage for a tragedy. This one—in a southern industrial plant—cost a skilled workman his arm.

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Plates • Sheet • Strip (Alloy and Special Grades)

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Magic Lens Tissue

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SILICONE TREATED

For perfect lens cleaning at lowest cost, American industry's swing to MAGIC LENS TISSUE (Silicone treated) is one of the greatest success stories of the Safety field.

Each sheet is over 50% larger than usual. Yet Magic costs you less. $8.40 per Carton (6 refills per carton). The compact Dispenser is only $2.50.

Now comes our HEAVY DUTY Cleaning Station; for coal mines, foundries, heavy-grit areas, or where anti-fogging fluid is necessary as in packing houses, canneries, etc.—on PLASTIC GOGGLES, SAFETY SHIELDS or any PROTECTIVE SURFACE.

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The Heavy Duty Dispenser locks the can in place. No pilferage. 20 gauge steel. Indestructible. Compact. It is so ingeniously constructed, including ample space for disposal of

OR THIS FOR HEAVY DUTY

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Touch the top and PRESTO! The locked-on pressure can does the rest. Scientifically regulated.

The Silicone Paper Company of America, Inc.

General Offices: 75 E. 45th St., N.Y. 17, N.Y.

(For further details, use Key # M-9 on free Inquiry Card on page 73)

It's Safe to Say

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★ "MAN, IT'S CRAZY"

PROGRESSIVE management is vitally concerned with cutting costs. When this objective can be reached without jeopardizing production, labor relations or the hundreds of other factors involved in industrial operations, an ideal situation is the net result.

Expert accident preventionists know that progress toward safety is almost invariably another way of effecting substantial economies. By virtue of their daily routine duties, leaders in the field of accident prevention constantly are aware of the high costs of accidents.

Nevertheless, safety directors too often are confronted by a small segment of industrial management blind to the real costs of accidents in the plant. This form of apathy can stunt the growth of any safety program when the man charged with the responsibility of preventing accidents is told that insurance covers their cost. Nothing can be farther from the truth.

In these days of rapidly mounting overhead, there never has been a greater need for increased output per man-day. In evaluating the true cost of an accident, we must take into account the cost of losing an experienced employee, the expense of first finding and then training a replacement, and the considerable loss of production caused by shattered morale when a group of men see a co-worker injured. The more serious the injury, the greater is that loss and a particularly gruesome accident can stop the production line with the sudden impact of a bolt of lightning.

Any co-worker who helps carry out the body of an operator killed in a "kickback" never can operate the machine without the subconscious mind creating the fear that "I may be next." Therefore every accident on an unguarded machine cuts production for weeks and perhaps months after the first accident. The element of fear can be a powerful deterrent. Its force is felt by the biggest braggart in the plant, whether he knows it or not.

Where a kickback from a rip saw kills a man, the threat to production can be minimized somewhat by bringing in a brand-new replacement from the outside—a man unknown to the accident victim. But at best, production of every witness to the accident is lessened.

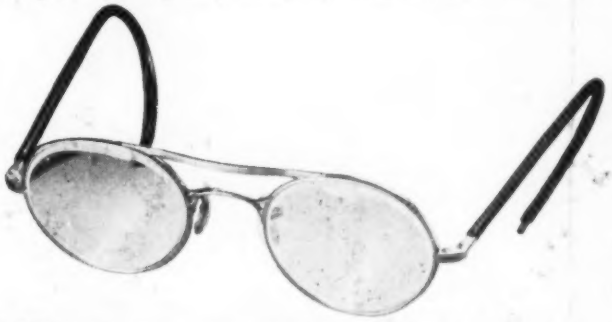
Full production can be assured, costs are greatly reduced and employee morale will be maintained on the highest level by providing the utmost safety on inherently dangerous machines. Developments in metal working machine guards, as well as in wood-working guards, can provide a sure guarantee of increased output with a downward plunge in costs per finished unit.

Insurance covers all the costs of an accident? In the vernacular of our be-bop teen-agers, "Man, dig that crazy thinking!" H.A.

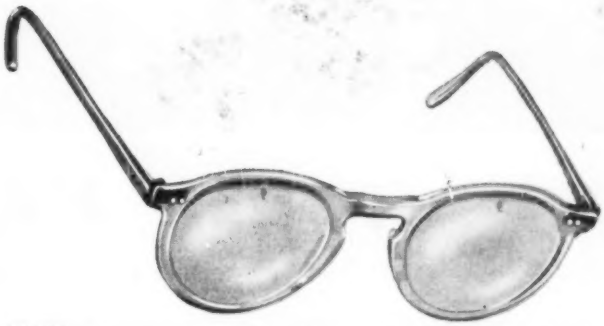
METAL frames or ACETATE...

ALWAYS SPECIFY BAUSCH & LOMB SAFETY EYEWEAR

With some eye-protection problems, a toss of a coin could determine the choice of metal frame over acetate—or vice versa. Usually, though, the job situation dictates the frame type. In any case, the degree of protection depends on the skill in the design, quality workmanship and materials. You can be sure of the quality, always, if you specify safety eyewear by Bausch & Lomb.



H-10—Non-corrosive white metal frame with rigid double bridge construction, actually lighter than its Bausch & Lomb acetate counterpart. Rugged, easy to fit. Cable temples are insulated, sweat-proofed.



Y-70—All-acetate model is ideal for workers whose skin is sensitive to metal frames. A favorite with women because with rigid temples Y-70 is easy to slip on and off without mussing hairdo. As with H-10, above, full range of bridge sizes and lens sizes. Ideal for safety lenses ground to worker's prescription. Ask for full data: Bausch & Lomb Optical Company, 90524 Smith St., Rochester, N.Y.

You can benefit from these Bausch & Lomb industrial vision services

1. **Complete Line of Protective Eyewear**—Completely dependable safety eyewear engineered to meet the most rigid tests for every job in your plant. Protection from all types of eye hazards.

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4. **Employee Education Programs**—Posters for bulletin boards, pay envelope inserts, other material designed to stimulate interest among workers for eye safety measures; an adjunct to your safety program.

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BAUSCH & LOMB CENTENNIAL

BAUSCH & LOMB *Safety Eyewear*

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BRANCH OFFICES IN PRINCIPAL CITIES

(For further details, use Key # M-11 on free Inquiry Card on page 73)

SAFETY MAINTENANCE & PRODUCTION

VOL. 106, No. 6 • DECEMBER, 1953

41st National Safety Congress

Accidents Sap Our Strength

MORE than 12,000 accident preventionists and safety leaders learned that accidental casualties in industry threaten the lives of our citizens.

At the world's largest safety show—the annual National Safety Congress and Exposition—delegates from almost every section of the globe heard first hand reports of steps to combat our greatest single internal enemy, which snuffs out thousands of American lives needlessly every year. New techniques for combatting this menace were outlined by experts who stressed the fact that the most potent weapon is the safety-minded employee.

Among the chief attractions at the convention was the greatly enlarged exposition of safety devices, products and services. A full-scale parade of safety equipment captured the attention of thousands of visitors for virtually an entire week. Late developments in protective measures as well as improvements in design enabled delegates to keep abreast of new trends to rout the accident enemy.

Following are highlights featured at the hundreds of subject sessions:

Accident Prevention

Accident prevention is an integral part of production processes and not a separate activity. This credo, W. W. Brant, supervisor of safety at Bethlehem Steel Co., told the Congress, enabled his company to compile a challenging record for accident prevention among steel producers during the past 19 years.

Mr. Brant described the latest innovation—weekly inspections of all departments. Inspections, he said, are an education in accident control for the inspectors, create a better understanding between safety personnel and production workers, and re-emphasize the fact that safety is everybody's business.

When it comes to planning safety, there is no management side nor labor side of the table. There are only people doing all they can together to curtail the saddest by-product of industry—human scrap. Louis J. Lackner, safety director of Apex Electric Manufacturing Co., recounted the tangible results of this kind of all-out industrial cooperation.

"There has been a steady decline in accident frequency," he an-

nounced, "and our industrial insurance has reflected our success."

Will a union help enforce company safety rules? Ray O'Leary, safety director of the Corn Products Refining Co., told of a case in which a union workman injured his leg on the job and didn't report to first aid until 4 days later, when the leg had become infected.

Since the first rule in safety is that all injuries, no matter how slight, must be reported immediately, the union recommended to management that the worker be given a week lay off. Management concurred.

Huddles in football plan strategy that scores touchdowns. In industry, too, supervisory teams must huddle periodically to rekindle enthusiasm and get closer to the goal of safety. C. J. Russell, engineer of the Arkansas Fuel Oil Co., compared the field superintendent in industry to the quarterback in football. Both must know their players and constantly strive to get the most out of their individual capabilities.

When the accident rate in an industry levels off, what can be done to further reduce accidents? This question was posed by W. F. Bates, superintendent of drilling for the Shell Oil Co.

Accident frequency and severity statistics for the petroleum industry reveal improvement is considerably less than it was a few years ago, he said. Foremen must be made to realize their responsibility for training the individual. The individual, in turn, must be assigned greater responsibility for his own safety said Mr. Bates.

Earl D. Hargis, a paper foreman of the International Paper Co., called a paper program not enough to prevent accidents. He added that all foremen expect the complete backing of top management in carrying out a safety program and expect to be kept well informed of all developments along safety lines.

"It can easily be seen in what position a foreman finds himself, if he has talked and talked safety to his men; and, when an unsafe condition is reported, nothing is done to correct it," he declared.

The fourth dimension of safety—enthusiasm—was explained by Fred C. Prescott, assistant director of employee relations, Caterpillar Tractor Co. The 3 dimensions which have been in safety for years he listed as education, enforcement and engineering.

Mr. Prescott gave these rules for injecting the fourth dimension into a safety program: radiate importance for the work right from the top to the bottom; merchandise and promote safety; give credit for good work; emphasize the positive results of the program; try to bring in fresh viewpoints and new approaches, and don't kill enthusiasm by failing to acknowledge someone else's ideas.

Don't hire an accident; the Congress was told by John Cruickshank, chief engineer of the Federal Insurance Co. Some companies do just that because improper placement fails to match men and jobs, creating an accident potential easily overlooked.

Safety Programs

Just as in any other activity, safety programs must be organized beforehand to be most effective, according to John Talman and Samuel Gardner, training supervisors of an E. I. du Pont de Nemours & Co. plant. Preparation, location and notification of participants should be taken care of far enough in advance so that the meeting will run smoothly.

Attempts should be made to stimulate discussion. Acknowledging contributions from the floor appreciatively goes a long way in fostering audience participation. Criticizing individuals before the group adds nothing constructive to the meeting.

"Get rid of the idea that a safety program is built on goggles, hard hats, safety shoes, posters, flags or prizes," said Dr. S. L. Rankin, medical advisor of du Pont's petroleum chemicals division.

"They're important adjuncts, but every individual, converted in safety and thinking safety constantly, is the most important factor," he declared.

An effective safety training program must give employees 3 things—attitude, skill and the ability to think ahead, according to Sam E. Sharp, safety director of the Tennessee Copper Co. Probably the most difficult task is to get men to think ahead to see the potential hazards, he said, but discussion groups and crew safety meetings encourage men to observe and talk about unsafe practices which they feel should be improved.

Most fatal occupational accidents occur in small plants which usually have no organized safety activities. However, something is being done about this in Pennsylvania, according to John H. Seeton, secretary of the Pennsylvania Manufacturers Association.

A survey revealed 66 percent of local trade associations had no safety programs for their members. Since membership in these associations is held largely by smaller manufacturing plants and factories, a meeting was called to which executives of small employer groups were invited. They were shown the advantages of organizing and selling safety to their members—savings in workmen's compensation rates, and higher levels of safe and uninterrupted production.

Regular monthly meetings are held in which a well-rounded program for safety has been formulated. Committees have been formed which carry out the plan. In one activity particularly helpful to small plants, safety engineers from larger plants visit the smaller companies and assist and advise in safety problems. Mr. Seeton said he is convinced that the best way to initiate and promote safety in small plants is through local trade associations.

Six points for factory safety were enumerated by Arvid Tienson, of the Illinois Department of Labor. Plant employee participation in the formulation and administration of safe practices and safety rules is number one on his list. Continuous and intensive safety education he termed his second rule, because safety rules can't be obeyed if workers don't know what they are. "President,

superintendent, foreman, employee and even visitors must be included in a safety program," Mr. Tienson said, making his third point.

The fourth point was that safety must be considered on a par with production. A safety rule must never be relaxed just to increase production. Making foremen the key in management's enforcement of safety was Mr. Tienson's fifth point. Penalties for violation of safety rules constituted the sixth point of Mr. Tienson's talk.

An industrial safety program designed to save lives can also aid production, Donald O. Collins, assistant superintendent of the Mead Corporation No. 1 mill, told the Congress. He explained that an accident prevention program can help the plant superintendent do a better production job by: encouraging the use of better placement procedures; helping to develop better methods for training employees; providing proper supervisory training; encouraging the use of job analysis; establishing and maintaining a program of good

(Continued on page 56)

Rescuer, Andrew Pastir, is photographed at the National Safety Congress.

SAFETY DIRECTOR'S PROGRAM SAVES SON'S LIFE

THE story of how a training program in first aid and life saving set up by the safety director of a large manufacturing plant paid an unexpected dividend—the life of his own son—was unfolded at the recent annual meeting of the National Safety Congress.

The father is John R. Perry, safety director for Daystrom Instrument Division, Archbald, Pa., manufacturers of naval armament. One of the pupils in his training class is the hero of the story, Andrew Pastir, 27, of Jessup, Pa. Last summer, Perry's son, John R., Jr., and the father of two children, was opening a valve above a tank of sodium cyanide when the platform on which he was standing gave way. Young Perry fell into the tank, was stunned and began to sink into the deadly poison.

Pastir, working nearby, rushed over, pulled Perry from the tank before he submerged completely, plunged him into a tank of clear water, stripped him and washed the poison from his body. A nurse arrived quickly and completed the first aid treatment by applying solutions to neutralize the poison.

The result—only minor injuries. The accident occurred on a Friday. Young Perry was able to return to his job the following Monday without the loss of a single day's work. Daystrom was able to maintain an outstanding safety record now approaching 3,000,000 man-hours without a single lost-time accident.

Pastir was flown to Chicago to attend meetings of the National Safety Congress and to be honored by American Motorists Insurance Company. He was presented the AMICO Life Saving Medal at a special ceremony as Perry's grateful father looked on.

"This medal is awarded only to those who have performed some outstanding feat of bravery involving great personal risk, and recipients are selected only after careful screening," Pastir was told by Mark Kemper, treasurer of the insurance company.

"Your quick thinking and fast action without regard to your own personal safety qualify you for this award. You not only saved the life of a fellow employe, but also saved him from serious injury thereby enabling him to return to the plant without the loss of a single day's work. Your courageous feat also enabled your company to maintain an outstanding safety record," Kemper stated.

"Our congratulations go also to the father of the man you saved, John R. Perry, Daystrom safety director. His efforts and the efforts of the Daystrom management to teach employees safety, first aid and the principles of life saving paid off a handsome and unexpected dividend —the life of his own son."

1.

WHICH SAFETY

2.

Giveaway on this black oxford is clipped inside heel corner.

Are you represented among the men buying these pick out your own shoe, but can you guess the picture captions will give you some clues and the Each shoe shown has special features designed to in his particular job. It is a credit to safety engi- workers can now have footwear tailored to fit the

1. THESE shiny black oxfords are worn by policemen. The neoprene cork sole is resilient, insulates the foot against hot and cold pavements, and lends surefootedness. The manufacturer has also taken special pains to make these shoes squeak-proof, an advantage when catching up with wrong-doers. The clipped corner on the inside of each heel is an indication of the lengths shoemakers go to in fitting a shoe to a job. This feature, cribbed from para-troopers' boots, is designed to keep a cop from catching his heel in his pants leg while running.

3.

Thick rubber soles, neoprene-coated upper, and steel toe cap are clues for this shoe.

2. This one shouldn't be too difficult. It's a waterproof shoe for chemical workers. The thick tread gives sure footing on wet floors, and the neoprene coating protects the rubber water-proofing compound from chemical attack. Previously the uppers used to crack prematurely. The shoe also has a steel cap to protect the wearer's toes from injury.

3. This is clearly an outdoor shoe, but it's one designed especially for loggers. The high heel throws weight onto the ball of the foot and helps a woodsman keep his balance while scrambling over logs. The logger heel is also popular among construction workers and field engineers who must clamber up and down steep banks and over rocks. The cord-rubber sole is used for non-slip qualities, although if a logger intends to do any logrolling he'll generally buy a shoe with a leather sole and hammer dozens of hobnails into it. The high tops protect ankles against brush burns, and the tongue, or gusset, is stitched all the way to the top in case the wearer steps in shallow water.

High leather heel and cord sole are the important features of this high-top shoe.

Designed for many ford has steel toe

4. This good-looking oxford is a fully approved safety shoe for industrial wear with its steel cap in the toe, yet it's attractive enough for dress occasions. Its neoprene sponge sole is light and comfortable, yet resistant to oil, heat, and abrasion. These two-in-one features make it popular among men who divide their time between the plant and the front office, for example, or those who simply want to look presentable on their way to work. Some men use them for dress until the tops are scuffed a bit, and then wear them to the plant. These two-in-one shoes are a good example of the current trend away from the old square-toed brogan that used to mark the man who did manual work.

5. This is a roofer's shoe, a tough one to identify. The neoprene crepe soles are tar-resistant, and pro-

SHOE IS YOURS?

different kinds of safety shoes? Maybe you can kind of work the other shoes are meant for? The answers can be found in the accompanying story. let the wearer work in greater comfort and safety neers and shoe manufacturers alike that industrial work as well as the worker.

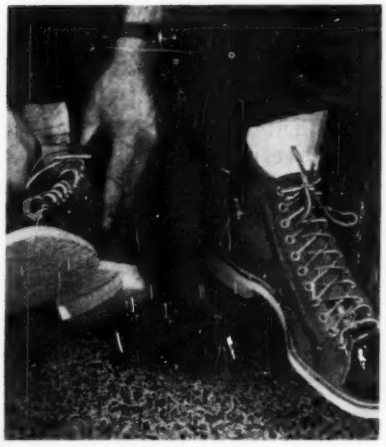
FEATURE

Third article of a series on Protective Clothing. First two articles appeared in the October and November issues.

4.

jobs, this tan ox- and neoprene sole.

5.



Rough-leather-topped, neoprene-crepe-soled shoe laces to toe, also has steel toe cap.

6.

Built-up rubber heel, tab of leather on instep, and steel arch feature this shoe.

7.

Elastic panels replacing laces and neoprene sole identify shoe.

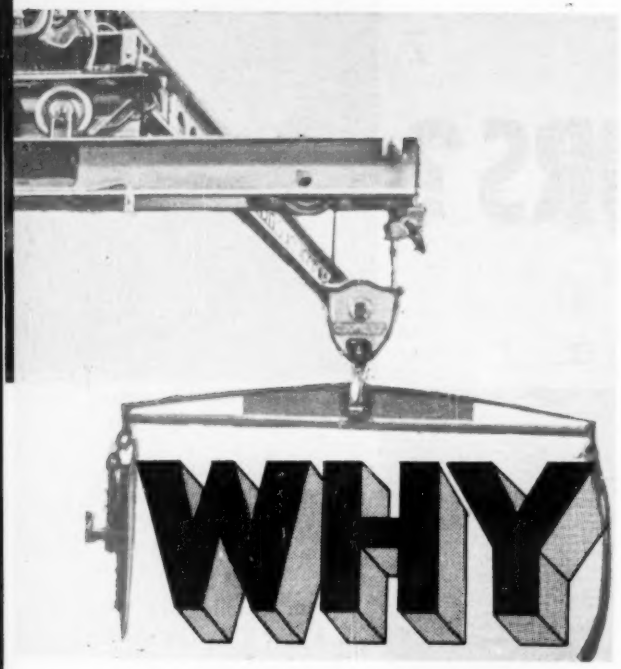
vide nonskid footing for workers on steep roofs. Since the side of the shoe is often braced against the roof, the rough leather uppers are double-thick to give longer life. The shoe is laced to the toe, sneaker fashion, for easier flexing. This prevents pinching across the toes when the roofer is working in a squatting position.

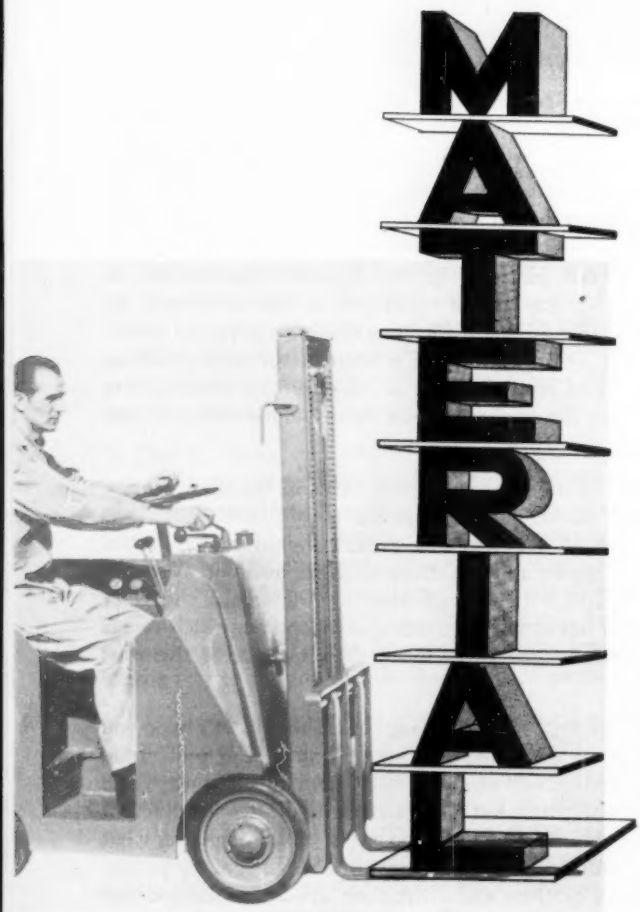
6. This boot is designed for that high-wire performer, the lineman. The heel is built up to hook the pole step, and the extra flap of leather on the instep takes the scuffs as the shoe is dragged against the pole. In this shoe one of the most interesting features is the steel plate that reinforces the arch. It provides a built-in platform for the lineman, who's forced to stand on narrow steps which could put his feet to sleep if he were wearing ordinary shoes. Sleeping feet are a potential deathtrap, it is said, because they give a lineman the sensation that he's falling. If he reaches out to save himself, he might grab a hot wire. Thus the reinforced arch means added safety as well as comfort.

7. Here's one of the most interesting shoes in the whole group. It's a foundry worker's boot. The elastic side panels allow the wearer to slip off the boots in a flash should molten metal splash on the uppers and threaten a king-size hot foot. Welders like the laceless feature for another reason, too. Sparks burn through the laces of regular shoes. A foundry man prefers high tops to keep out sparks and hot sand. The sole is of neoprene, which resists heat and the oil found on most plant floors. Like all industrial safety shoes, these have protective steel caps in the toes.

Well, how did you score? Did you find your job among the men buying these shoes? Let's hope you didn't find a safety shoe designed for a job in your plant where the men aren't wearing this protection. It's a good idea to know just what jobs require protective footwear and what kind they require. You may think you'll never use linemen's shoes in a chemical plant; but there are plenty of uses for different shoes that, at first glance, don't have anything to do with the name they go under. Also, no matter what the industry or job is, shoes and boots are available with steel toe caps to give the very necessary protection to the toes. Remember, people in industry are all brothers under the shoe and under the toe cap!

By courtesy of "DuPont Magazine."





THE overall picture of distribution and the inherent savings made possible by material handling equipment, including reduced damage and increased safety, are difficult topics to cover in a single article. However, let me briefly outline the responsibilities of the General Distribution Department at Lever Brothers, with particular emphasis on the department's responsibility for the selection of material handling equipment, and on its collaboration with the safety engineer to assure the highest efficiency per man hour, with maximum safety to the individual employee and the company's products.

The title of the department, General Distribution, is rather new in the field. It is the result of management's decision to assign responsibility to one individual for those expenses which add to the cost of the product but not to its value. Included in this category are:

1. Transportation, warehousing and labor involved in the receipt and delivery of all materials to the location where needed on the production line.

2. Transportation, warehousing and labor incurred after finished goods leave the packaging department until they are delivered to the customer.

3. Transportation of company personnel in the discharge of their daily assignments, including travel by commercial carriers, and the purchase, operation, maintenance and disposal of company-owned sales vehicles.

To provide the transportation, warehousing and delivery of materials to production lines, the department must be prepared to store excess materials when market conditions warrant excess purchases, and be ready to deliver them as production requires. The department's responsibility for finished goods requires determining how they shall be transported within plants and warehouses, and how and where they shall be stored. Frequently, storage facilities are taxed to capacity. The department must then determine whether it is more economical to hold the excess production in the immediate area of the production plant or to transfer it to distribution centers around the country. If the department were to distribute promiscuously all production to sectional distribution centers, distribution costs would soon soar to unreasonable heights. Experience has proved that substantial stocking of regional warehouses

results in costly cross-hauling from one warehouse to another. By closely observing the rate of stock disappearance and sales potentials the department tries to make available, close to the eventual consumer, the company's products in the minimum quantities required to enable the sales department to increase its sales.

Handling Responsibilities

Among the department's handling problems is the determination of the practicability of packaging desired by the sales and advertising departments. Frequently this involves working with responsible department heads for a change in the dimension of the package, to permit the General Distribution Department to design a shipping case of adequate strength and proportions. For example, a slight change in the dimensions of an inner carton may permit a shipping container design which has better interlocking features, enabling more efficient warehousing because the products can be piled higher without damage to achieve greater utilization of the warehouse cube.

The department works with the industrial and general engineering departments in the design of company-operated warehouses to procure the right facilities to handle efficiently and safely every case of goods produced at each plant. This embraces the type of structure, ceiling heights, floor loads, column spacing, lighting, ventilation, heating, shipping and receiving facilities, and the complete layout of storage space.

Comparative warehouse costs are maintained and constantly reviewed. Locations showing excessive handling costs are reviewed to discover whether the higher costs are a result of inefficiency of personnel, poor layout of storage and shipping facilities, or outmoded structures.

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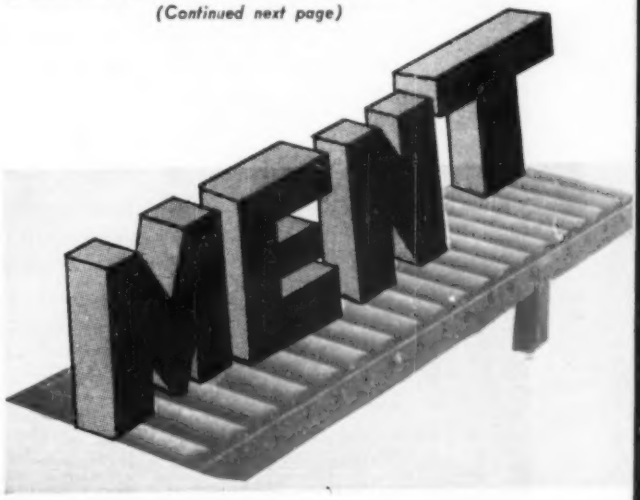
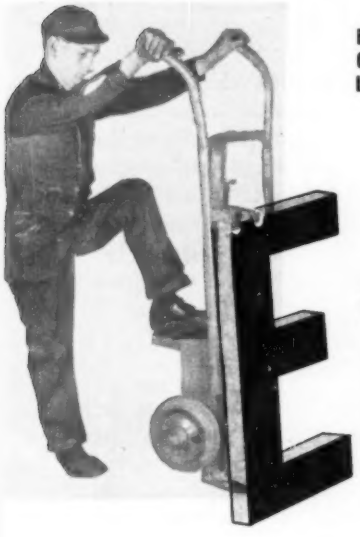
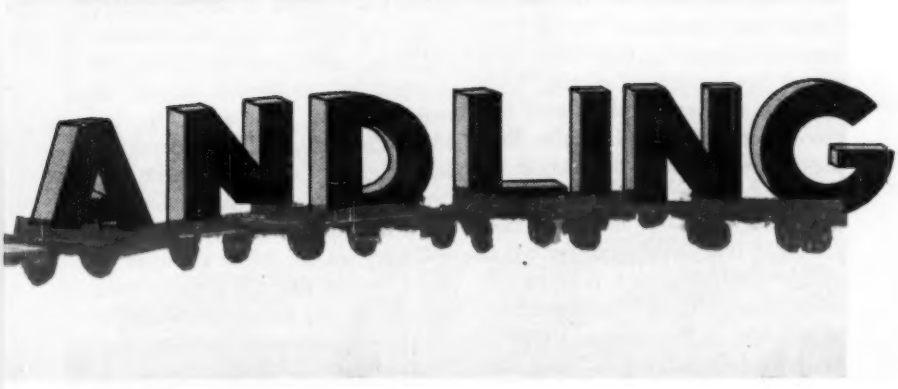


By R. C. WAEHNER
General Distribution Manager,
Lever Brothers Company





FEATURE

Second article of a feature series on Materials Handling Equipment. Next article will appear in the January issue of SM & P.

Comparative studies are then prepared, evaluating the gain to be expected if the physical facilities are improved by the construction of a modern warehouse. A hypothetical warehouse is then designed, of adequate capacity to store the products envisioned. Cost factors are assessed, based on experience gained on similar installations.

In these studies, the department must decide whether the movement in the warehouse is solely in one direction or is a two-way action. In either case, the design must incorporate the correct considerations. In one-way movement, all products stored in the warehouse originate within the plant and move outward. On the other hand, production limitations may cause a two-way movement in which a portion of production is produced at other locations and moved into the warehouse for blending with the output of the local plant.

In the construction or remodelling of a warehouse full utilization of any one or a combination of material handling devices may be used. With the amazing developments in the field of material handling, it is absolutely essential that industry give serious consideration to this vital segment of operations. In the past two decades, management has concentrated on the improvement of sales and production efficiency, and developed both to a high art. It is to be hoped that management will recognize the tremendous importance of the third phase in the cycle of business—handling and distribution.

The General Distribution Department determines the type and amount of material handling equipment needed to achieve efficient low-cost operations. Contact is maintained with all manufacturers of material handling equipment, and, when desirable, tests are undertaken in collaboration with them to test the efficiency of their equipment on the department's operations.

One plant or warehouse may require elaborate conveyor facilities and electronic devices; another may use palletized operations exclusively; and a third may combine the advantages of both. Basically, the selection of material handling equipment and methods is directly related to the physical structure and proper application of equipment to the job to be done. I have yet to find a modern piece of material handling equipment that does not have merit for a particular job, under particular conditions—be it a walkie-truck, fork truck, conveyor, drag line, trackless train or a hand dolly.

Fit Equipment to Production

In determining the material handling equipment to be used, the department evaluates the advantages of conveyor systems which enable production output to move directly from packaging to transportation or storage; and automatic palletizers, if the output of the various production lines is adequate to warrant the capital investment for the equipment. If the volume of plant production is sufficient to require substantial warehouse facilities, the department may decide it is better to use conveyors with electronic case selector devices to move production output to any location in the warehouse within 200 feet of its eventual storage point.

For example, in a warehouse embracing 200 thousand square feet or more, considerable distances would be travelled by fork trucks and trackless trains if the total output of the plant enters the warehouse at one location. However, by the use of electronic selectors, warehousemen are able to predetermine the most economic location for any one of the particular packs and brands. Assume, for instance, that there is a vacant bay capable of storing 6000 cases of a given product and the production schedule indicates that the following day's production of the product approximately equals this quantity. Each and every case produced that day, by manipulation of the electronic eyes, will be delivered to a point within a maximum of 200 feet of the proposed storage location, substantially reducing the distance travelled by the fork truck operator.

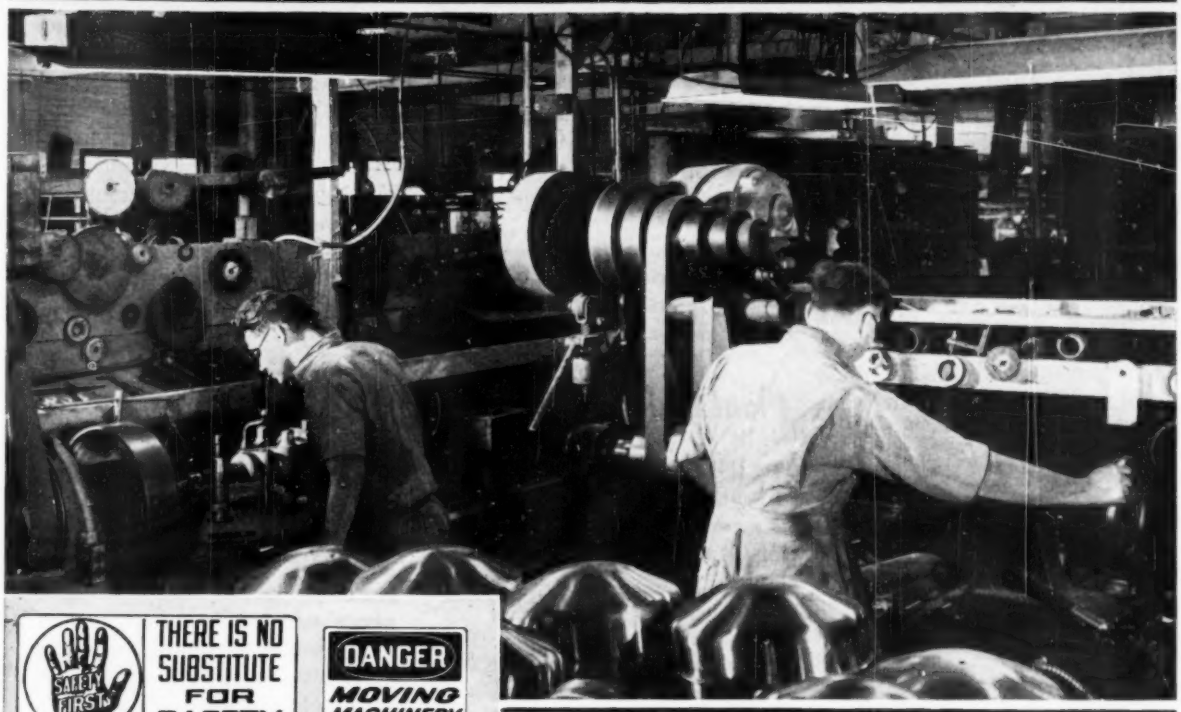
The labor cost per cwt. for the operation of such a warehouse is then related to current operating costs, and the saving is then evaluated to determine whether it warrants the investment for construction and equipment. If the cost and time studies prove such an installation desirable the engineering departments are consulted on the design and warehouse layout. On completion of layout drawings, material handling manufacturers are called in to discover the relative installation cost for various types of equipment —automatic conveyors, electronic case selectors, drag line, trackless trains, automatic palletizers, automatic lowerators, fork trucks and walkie equipment—one versus the other—to make certain that the material handling equipment is selected which will give the greatest output per man hour. The study also explores whether gas-propelled or electric-propelled vehicles are best suited for the particular operation. Total analysis must be made of the ratio of movement—rail versus truck; truckload versus less truckload—to determine the number of shipping doors needed to handle the movement of goods via each form of transport.

Safety's Role

All during these deliberations, the safety engineer is informed so that he can analyze the effect of the type of material handling equipment on the company's personal injury record. He will review the physical structure; and, if the use of gas-propelled vehicles is contemplated, will request the installation of blow-out panels within service rooms, and scuppers at gas pumps, as well as making certain that adequate ventilation is provided to withdraw any fumes, either explosive or toxic. Before any orders are placed for material handling equipment, they are reviewed by the safety engineer to make certain that the specifications include all the latest safety devices for the protection of the employee.

(Continued on page 22)

STONEHOUSE SIGNS For ACCIDENT PREVENTION



SAFETY FIRST
THERE IS NO SUBSTITUTE FOR SAFETY
DANGER
MOVING MACHINERY
CAUTION
UNDER NO CIRCUMSTANCES OPERATE MACHINES UNLESS ALL SAFETY GUARDS ARE IN PLACE
NOTICE TO FOREMEN
CARELESSNESS IS DANGEROUS
IF WORKMEN INSIST ON BEING CARELESS DISCHARGE THEM.
ALL HANDS ARE REQUESTED TO
HELP KEEP THIS PLANT SAFE AND CLEAN
THINK
A FIRE TO-DAY NO JOB TO-MORROW
SAFETY FIRST
A CAREFUL WORKMAN IS THE BEST SAFETY DEVICE
SAFETY FIRST
DO NOT TALK TO OPERATORS OF MACHINERY TO DISTRACT THEIR ATTENTION MIGHT CAUSE A SERIOUS ACCIDENT

Precision

Best workmanship can thrive only under favorable plant conditions. And first among these is Safety. Where there are safe, orderly surroundings and practices, even the most highly skilled workman does better, more productive work. Shop records prove it.

STONEHOUSE SIGNS

Use them to promote safe, top production; to reduce delays and lost time—to safeguard workers against accidents. Hundreds of Stonehouse stock-worded signs are ready for prompt shipment. Where special wordings are required, we produce them to your specifications.

Our complete Catalog, in full color, is free on request.

Stonehouse

SIGNS, inc. MANUFACTURERS • Stonehouse Bldg., 9th at Larimer
Denver 4, Colorado

"Signs Since 1863"

ACCIDENT PREVENTION • *steel* SIGNS IN STANDARD COLORS AND DESIGNS

(For further details, use Key # M-12 on free Inquiry Card on page 73)

During the 3 years this program has been in effect the company has substantially cut handling costs through modernizing material handling methods; and it has been able to deliver a more salable product, while tremendously improving the safety record in warehouses by elimination of fatiguing operations and the reduction of physical labor in handling its products.

The procurement, maintenance, operation and disposal of 1100 company vehicles also brings the safety department constantly into the picture. Advice is sought from this department concerning the advisability of providing operators with safety accessories, such as, directional signal lights, non-glare windshields and mirrors, fresh-air heating, and comfort devices designed to reduce fatigue and increase driver alertness.

The safety engineer collaborated closely with the General Distribution Department in preparing an operating manual, so that operators will have complete knowledge of and be required to follow safe driving practices. The safety engineer is a frequent visitor to divisional sales meetings, to stress the importance of safe driving, from the standpoint of the prohibitive losses incurred each year from dangerous driving practices, as well as from the viewpoint of personal safety.

With the addition of safety to reduction in cost and a more salable product the why of material handling becomes clear. This triangle of results makes me sincerely believe that the broad related field of packaging, material handling, transportation, warehousing and distribution, in collaboration with the safety field, can do more to combat the vicious cycle of inflation than any other segment of industry.

It has been proved that material handling costs represent an average of 20 per cent of total production costs. Prominent economists have long ago demonstrated that 50 cents of every dollar spent by the consumer represents transportation costs. When this statement is made, a questioning eyebrow is often raised, because it is easy to forget that a substantial part of the cost that is paid for materials to be processed into finished goods is transport.

It has often been said that it is not how much money you make, but how much you save that indicates your security. The reduction of costs through handling, with its attendant reduction in injuries, contributes to profits and better living for everyone.

From an address delivered at the 23rd Annual Greater New York Safety Convention.
Picture credits:
Upper Left—Cleveland Crane & Engineering Co.
Lower Left—Towmotor Corp.
Center—United States Navy.
Lower Right—Econoweld Corp.

Plant Maintenance Show

FIFTY-NINE conference sessions are on the program of the three-day Plant Maintenance & Engineering Conference at the Hotel Conrad Hilton, Chicago, Jan. 25–27. The conference, largest of its kind in the industrial field, will be held concurrently with the Plant Maintenance & Engineering Show, which is scheduled for the International Amphitheatre, Chicago, Jan. 25–28. Both events, now in their fifth year, are produced by Clapp & Poliak, Inc., New York.

The meeting will be divided into three general sessions, 16 sectional conferences and 40 round table discussions. Conference topics were selected after questioning every participant in the 1953 meeting to determine what subjects were considered most urgent.

The show, which has risen in a short period to a place among the five largest annual industrial expositions, is expected to attract 20,000 visitors. More than 350 companies are expected to conduct demonstrations and display products.

The conference will open with a general session on "Planning and Scheduling Maintenance Work." On the morning of the third day, another general session will be held on "Maintenance Cost Control and Budgeting," and the conference will close with a two-hour question and answer period at which an effort will be made to discuss all previously unanswered questions.

Sectional conferences will be devoted to "Preventive Maintenance —Pros and Cons," "Training People for Maintenance Work," "Organizing People, Policies and Procedures for Effective Maintenance," "Sanitation—Methods, Materials and Control," "Maintenance by Area Compared with Centralized Maintenance," "Work Measurement, Work Standards and Incentives," "Getting Management's Okay on the Maintenance Program," "Problems Met in Handling Maintenance Labor," "Corrosion Control and Prevention," "Hospitals, Medical Departments and First Aid Rooms," "Card Record and Analysis Systems" and "Waste Disposal Problems and Solutions."

Roundtables will be devoted to the special plant problems of eight industries. These include chemical plants, breweries and distilleries, food processing and packaging plants, paper mills and paper product plants, petroleum refineries, sheet metal plants, steel mills, and textile mills.

Particular types of equipment also will get special attention. These are materials handling, mechanical service, lighting, power plant, and electronic control equipment.

Other round table subjects include "Inspection and Upkeep of Electrical Distribution Systems," "Handling Equipment and Methods of Handling used in Maintenance Work," "Lubrication—Methods, Systems, Lubricants," "Maintenance Stores and Storekeeping," "Maintenance in Plants Having Up To 25 Maintenance Employees," "Maintenance of Plant Buildings" and "Janitor Work—Methods, Techniques, Organization, Control."

Eleven executives, drawn from more than 300 companies, have been named to an Exhibitors Advisory Board. The board will serve in an advisory capacity to determine policies to make the show more useful to visitors and to suggest the scope of the Plant Maintenance & Engineering Conference.

This is a true story, told, in his own words by the safety director of a large industrial manufacturing plant.

A WALK THROUGH THE PLANT

THE average plant safety program is a complete job. Hazard-eliminating inspections, employee education, safety committees, contests and fire inspections—all these, and many more, must be planned and executed to make the program a success.

But, to make my program click I take a walk through the plant. To understand what I mean, take a walk through with me.

Walking into the warehouse, I hear the foreman phoning Maintenance to have a hoist repaired. The hoist is needed today to help the foreman keep a promise of delivery made to a customer. If the hoist isn't repaired, Warehouse will have to use 3 men instead of one, slow up the job, and interfere with his regular shipping schedule.

I can't hear Maintenance's reply, but one look at Warehouse's face (and the censored language reaching my ears) makes it plain Maintenance may not be able to comply with his request today.

Remembering something Maintenance said in yesterday's walk through the plant, I play a hunch. I ask Warehouse, if I get him his hoist today, will he do something for me.

"Sure," he says, "anything, but get me that hoist today!"

(Continued on next page)

Out I go to Maintenance. I paint a picture of 3 sore backs, potential accidents, pain, lost time, and compensation, without too much effect. Then, I play my trump card and ask Maintenance if the wish he made yesterday, that Warehouse instead of Maintenance would move those "I" beams from Warehouse where and when needed, comes true will he do me a favor.

Well, Warehouse will get the hoist today. Maintenance will be getting their "I" beams moved when and where needed. Me? Oh, I get my "commission on the sale"—after Warehouse moves the "I" beams, Maintenance will repaint the beat-up aisle lines on the floor and, who knows, maybe I did save 3 sore back complaints.

I walk on into the Foundry and find a carpenter and his helper trying to move a 12 foot, 6x6 onto a truck. This violates a safety rule, because the weight is too much for 2 men. The carpenter tells me he can't find his regular foreman; and besides, he knows his foreman can't spare any men. Fortunately, the Foundry foreman is passing by, and I ask if he can help out by lending us one of his workers. He does, and a tough, unsafe job becomes easier and safer. As an extra dividend, the carpenter and his helper are a little more safety conscious than before.

Talking to the Foundry foreman, I find out that one of his assistant foremen has just been hospitalized for a kidney ailment. I will try to stop by the local hospital tonight, on my way home, to say hello.

Passing through the Cupola Department, I don't see the foreman around, but I notice he has put up an additional screen around the slag hole of Cupola; so I write him a note of thanks and stick it on his work bench.

Strolling into the Core Room I meet the Shop Steward. He thanks me for my help in getting some of the smaller conveyor ladders replaced. He remarks that one of his friends in the Test Department has just become the father of twins.

Down I go to Cafeteria and buy a cigar, then up to the Test Department and surprise the proud Papa by giving ***him*** a cigar, with the compliments of the Safety Section. He now has 2 very good reasons to work safely.

Passing back through the Foundry, I see a worker about to whack another employee bending down to pick up a piece of scrap. This situation I report immediately to the man's foreman. The foreman warns the joker on the spot that the next such prank attempt will mean dismissal. Horseplay is one thing we can't safely tolerate!

On the way back towards the office I join a conversation between two neighboring departmental foremen. The conversation turns towards the good housekeeping bimonthly contest; and, when I leave them, the foreman with the lower rated department has bet the other foreman a free lunch that, in the next rating, his department will make a higher score. If they both earn top ratings their free lunches will be on the safety man.

As I am about to enter my office one of the boys from the office greets me with, "Boy, what a racket you got, nothing to do but walk through the plant."

Yes, to concentrate on all the details of a planned safety program is a big part of my job, but to make my sales for safety, I guess I do have a "racket." I just take a walk through the plant.

"Human Relations" Is Good Safety Approach

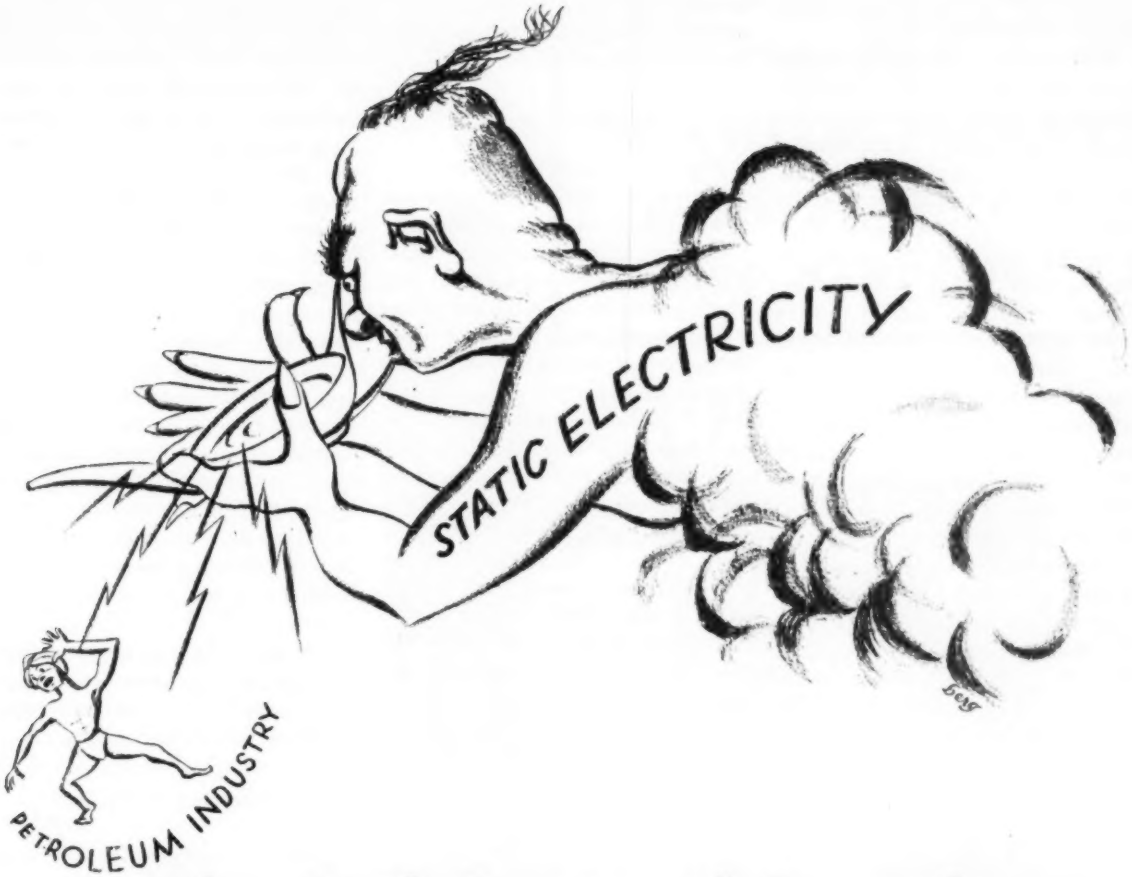
THE "human relations" approach to industrial safety continues to be effective, while the management-engineering approach of providing safe working conditions is nearing its practical limits.

This is a conclusion of the lead article on "Industrial Safety and Health in the United States" in the summer issue of the *Industrial and Labor Relations Review*, published by the New York State School of Industrial and Labor Relations. The authors are Herman M. Somers (Chairman, Department of Political Science, Haverford College) and his wife, Anne R. Somers (formerly an economist with the U. S. Department of Labor).

The human relations approach, utilizing the newer discoveries in industrial psychology, is still making headway in eliminating human accident factors: inadequate instruction, poor supervision, fatigue, boredom, carelessness, poor discipline. The worker is taught not only how to do a job in a safe manner, but also to *desire* to perform the act in the manner known to be safe. Further, both labor and management now clearly understand that industrial safety requires cooperative activity.

In the field of general industrial safety, the federal role has traditionally been limited to one of promotion, education, and technical assistance. An increasing number of people, especially union leaders, feel that federal responsibility should go far beyond these limits. There is also a growing dissatisfaction with the record of state governments in the field, the authors continue. A major problem relating to government aid is the recurring jurisdictional disputes between state and federal agencies, and between health and labor departments within both powers, the writers believe. Perhaps one solution may be the division of legislative and enforcement authority.

In-plant health services, rendered by full or part-time medical personnel working through a plant clinic or dispensary, constitute the core of a fast-growing field of industrial medicine. The best available evaluation of these services is industry's widespread conviction that they pay off. It appears that compensation has a marked initial effect upon prevention activity, but that it eventually spends itself, and other motivations must replace it. While compensation costs may still constitute some incentive to prevention, potential savings in premiums are minor compared to other economies, the article adds. Employers are evaluating new health programs less in terms of their effect upon compensation than upon the more costly factors of absenteeism, labor turnover, and morale.



The Evil Genie of Petroleum

By J. C. HOWARD

When somebody in the petroleum industry rubs something the wrong way—he often gets static electricity—and maybe an explosion! It appears as if by magic, but magic won't get rid of it. It takes study and effort.

STATIC electricity is electricity in its elementary form, according to textbooks. There are few books on electricity and physics that do not introduce the student to electricity by describing simple experiments in static phenomenon and passing quickly on to other material considered more complex. To those who have contact with the problems of static electricity the phenomenon is far from simple. In fact, one is likely to have the feeling that the more he delves into the subject, the less he knows about it.

The intention of this article is to attempt to separate facts from conjecture, in the static problems of the petroleum industry.

Static electricity is generated by a separation of charges. It is readily apparent to everyone that loose charges are not found floating around of their own accord. Electric charges of unlike polarity will be attracted to one another and most objects will therefore tend to be more or less neutral. While some objects may be charged by the addition or subtraction of electrical charges, the charged condition exists only until the separated charges recombine. This simple explanation, while true, does not tell much about the generation of static electricity. It is used as a dodge by those who do not actually know what is going on and have to provide an answer.

The separation of charges requires work; consequently, generating static electricity requires work. The work may take the form of friction, impact, cleavage, flow, movement, condensation or change of state. Generation of static electricity appears to be confined to solids and liquids, and does not occur in gases.

Solids and liquids can be divided into conductors and non-conductors. Conductors permit electrons to flow freely, consequently an electric charge will distribute itself over the surface of a conductor. Non-conductors, or insulators and dielectrics, as we may often refer to them, do not readily conduct electricity. Therefore, charges do not distribute themselves on the surface with as much uniformity. These facts should be kept in mind. They have

an important bearing on static problems to be discussed later.

Static electricity can be generated in so many ways that it is generally difficult to analyze the exact mechanism of generation. This mechanism of generation is related to the molecular structure of the material and, particularly, to the disposition of the molecules at the surface of the material. Some materials exchange electrons, and possibly atoms, on contact with other materials. Sudden separation of the materials separates the charges and; in accordance with electrostatic laws, the electric potential between the objects rises. There is very little known about the exact mechanism of this surface phenomenon, so closely related to the generation of static electricity. For this reason relatively little is known about static electricity. It is certain only that particular operations will generate it and; when generated, it can be handled the same as electricity developed by chemical methods or electric generators.

Instruments

Investigations into problems of static electricity require some form of instrument for detecting static charges. The most common instrument is the gold leaf electroscope. This device has the advantage of cheapness, portability and high sensitivity. Another device for measuring static charges is a two stage, push-pull, direct coupled amplifier, that is to say, an amplifier for the amplification of direct current. For field work there is a portable battery operated, amplifier. Amplifiers of this type can be calibrated and used to measure the generation of static electricity. Instruments of this class will measure down to approximately 10–11 amperes.

When static charges are quite large it is possible to use neon lamps of a type used to test spark plugs on an automobile. In some instances generation is large enough to produce sparks and a testing device is not needed. In making static tests on flammable liquids it is advisable to use a probe and connect the probe by wire to a remotely located instrument.

Mysterious Static

The varied static electricity problems in an oil refinery disclose some of the vagaries of static electricity.

On one occasion I received a call from the safety department to check on reports of static being generated during the filling of steel drums with a certain type of grease. The drum had a full open top and was filled by a 2 inch pipe. The operators had stopped operations and were ready to resume to demonstrate how sparks jumped around inside the drum. When operations were resumed no sparks occurred and no charge showed even on an electroscope. The red-faced operators swore they all had witnessed the sparks. They tried various speeds of filling on barrel after barrel, and there was not the slightest indication of a static charge. The operators undoubtedly observed static sparks, but one of the things that we learn in dealing with static electricity is: ***in many instances, the conditions necessary to generating and building up of a charge are extremely exacting, and difficult to reproduce.***

I distinctly remember the difficulties of my physics professor in attempting to get a static machine to produce at a critical point in his lecture. He insisted that it had worked very well before the lecture, but he never succeeded in getting it to generate when he needed it. Here was a machine designed to generate static and yet it would not perform! Perhaps the humidity changed rapidly or some other conditions varied. Here is another example of the temperamental characteristics of static electricity.

On another occasion I was called to an office to investigate a report of sparks jumping between a metal pail and a steam radiator. The pail was resting on a linoleum floor and had been placed under the air valve which was discharging steam into the pail. The small flow of steam was enough to cause sparks half an inch long between the pail and the radiator. This appeared to be such a simple static generator that I thought I could reproduce the phenomenon, using a pressure cooker as a source of steam. There was not the slightest indication of a charge, even though I tried all combinations of insulating and grounding the pressure cooker and the pail. Apparently some ingredient was missing, but it was certainly not apparent. Perhaps the shape and distribution of electric fields is the deciding factor in building up static charges. Unless the electric field is distributed in a manner favorable to self-excitation the charge will not build up. Static machines operate in a manner very similar to direct current generators in that they must build up a field or excitation to operate.

All this points to the necessity of making numerous tests for static generation before arriving at any definite conclusions.

Petroleum Problems

Handling, transportation and storage of petroleum products presents a number of problems in dealing with the hazards of static electricity. Tanks, containers and piping, all being made of metal, do not present a difficult static problem because they are conductors and can be readily bonded and grounded when necessary.

The most difficult problem concerns the oil inside the tank or container because the oil is an insulator and has a free oil surface. As previously mentioned, static charges can accumulate on the surface of a non-conductor; and, because the oil surface is non-conducting, charges are difficult to ground.

The mechanism by which static charges are generated and accumulated on an oil surface is not very well known or understood. If this particular mechanism were thoroughly understood it might be possible to devise methods of preventing generation. It is known that a number of operations in the handling of flammable liquids are con-

ducive to building up static charges on free oil surfaces.

Probably the most prolific generator of static electricity in the petroleum industry is the air-blown type of agitator used in treating naphthas. It has been known for years that static electricity generated in air-blown agitators causes sparks to dart about on the surface of naphtha in the agitators. Operators have seen sparks many feet in length, and called them "go devils". It is a hair-raising experience just to open an explosion door on an agitator and take a look at sparks darting across the surface of thousands of gallons of naphtha. One quick look is quite convincing. The mixture is ordinarily too rich to ignite, but sometimes it does.

Static Testing

In one instance, a long cane fish pole with a copper ball attached to the end became a probe for picking up static charges in the atmosphere above the surface of liquids. The ball was connected by an insulated wire, taped to the fish pole, and carried 50 feet outside the agitator to a portable direct current amplifier. The probe was inserted in the agitator through an explosion door and lashed in position to place the ball high above the surface of the liquid out of reach of any sparks. Any charge on the oil surface would induce a charge on the ball which would be detected by the static meter. Various stocks were treated including water white, heater oil, oleum spirits, mineral seal, mineral spirits, tractor fuel and naphtha cleaners.

The operation cycle of an agitator begins with filling the agitator tank with stock. A chemical solution, known as "doctor solution," is introduced at the bottom of the tank. Agitation follows, by blowing with air brought in at the bottom of the tank. After agitation, the "doctor solution" is permitted to settle out and is drawn off at the bottom. The oil is then washed with water sprayed in at the top and is simultaneously agitated by air from the bottom.

(Continued on page 44)

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"conference committee" plan for safety

By NELSON P. INGALLS
Vice-President, Industrial Division, Worcester County Safety Council, Worcester, Massachusetts.

THE problems of accident prevention are common to many communities in this country. Each has eventually to meet these problems. In Worcester, Massachusetts they were attacked by setting up a county safety council. Once formed, this council was divided into six major divisions: fire, fleet, traffic, home, child activities and industry. A vice-president was put in charge of each division.

Now that the council with its safety divisions was set up, the basic organizational work was over. The problem of making it work began. In the industrial safety division a plan was adopted called the "Conference Committee Plan." It was offered to the members of the division not as a complete solution of their injury problems but rather as one more aid to help them reduce human suffering through accident prevention. Forty industrial companies have participated in the committee meetings.

The Conference Committee Plan is a cooperative venture in accident prevention by representatives from industrial companies. Under the plan all the industrial companies are divided into five sub-divisions according to the number of their employees. As you will note on the chart of organization, a vice-president of the safety council is the executive officer of the plan. He is nominated and elected by council members.

Top Echelon

An advisory board, made up of a group of veteran safety directors of Council member companies, are selected by the vice-president. Their function is advisory only. Another advisory group is the Advisory Council, composed of 10 representatives from the management of industrial companies in Worcester, the ex-industrial division vice-president, the president of the Worcester County Safety Council, and the present industrial division vice-president. This group meets annually at a time and place selected by the industrial division vice-president, to review the year's activities and plan for the coming year.

If the activities of the division committees indicate a need for additional executive assistance for the vice-president, a general and a divisional chairman may be selected. The former would be elected by a vote of the sub-divisional chairmen, members of the committees in each sub-division and the vice-president. The latter would be appointed by the vice-president of the industrial division. Other officers under the conference committee plan are chairman, vice-chairman and secretary of the various sub-division committees who are elected by the committee members. (See organizational chart.)

Heart of the Plan

The heart of the Conference Committee Plan is the sub-divisional committee. In the division of companies under the plan this type of committee is set up in each sub-division. If the number of companies and scope of activities warrant it, several committees may be set up in the same sub-division. Since all member companies in each sub-division have similar size establishments, number of employees, experiences and problems, the sub-divisional committee, composed of representatives from these companies, can achieve an exchange of ideas and efficiently assist in solving problems by personal contact and discussion.

Local conditions will determine the size of committees, but 15 members will usually provide a working group of 10 at all meetings. Experience indicates that bi-monthly meetings are frequent enough to retain continuity of interest, and individual meetings of 1½ to 2 hours length have proved successful. Committee

members decide the time and place of their own meeting. It has been found that evening meetings are best for companies which employ less than 200 workers. The varied responsibilities of supervisors in these companies do not permit an absence from the plant during working hours. However, noon meetings are practical and preferred by supervisors in larger companies.

The minutes of each sub-division committee meeting are circulated to all committees and officers throughout the Worcester County Safety Council. This distribution of experience and ideas provides maximum benefits for all members.

It is desirable that all sub-division committees have a planned agenda in order to maintain continuity of interest and unity of objective within and between committees. Here is an agenda offered as a guide in the conduct of sub-division committee meetings:

1. Record the minutes of all meetings. Distribute them to committee members, other committees and executive officers.
2. Review minutes of other subcommittee meetings.
3. Establish a record of accident frequency of the committee members. Distribute this as item number one of each meeting.
4. Analyze case histories of member companies' accidents and recommend corrective action.
5. Review specific problems.
6. Exchange ideas.
7. Suggest the subject matter for the industrial division monthly meetings.
8. Utilize the facilities of the local safety council.
9. Visit member companies in trouble to help solve their problems.
10. Have the vice-chairman conduct committee meetings periodically.

The ultimate objective of the Conference Committee Plan is to have all industry in the area represented in the plan's committees and as members of the local safety council. Then the problems of industrial accident prevention can be met by all for all and overcome.

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"What's the Law?"

Edited by
HENRY M. GROSMAN
Counsellor at Law, Newark, N. J.

Master Superior Court, New Jersey
Member
American Bar Ass'n, New Jersey Bar Ass'n, National Federation Insurance Council
Past Commander, American Legion, Post 10, Newark, N. J.

OCCUPATIONAL DISEASES UNDER NEW JERSEY WORKMEN'S COMPENSATION ACT

ALTHOUGH the New Jersey Workmen's Compensation Act was first passed in 1911, it was not until 1924 that "occupational diseases" were specifically set up by statute *(P.L. 1924, C124)* making disability compensable from exposure to certain specified diseases: anthrax, lead poisoning, mercury poison, arsenic poison, phosphorus poison, poison from benzine and homologues and all derivatives thereof, wood alcohol poison, chrome poison, caisson disease.

All diseases from poisoning not specifically scheduled, were not compensable. However, actions could be maintained at common law for disability resulting from unscheduled hazards *(Downing v. Oxweld Acetylene Co.* (Carbon bi-sulphide) *169 Atl. 709 (Sup. Ct. of N. J. 1933. Smith v. International High Speed Steel Co., 98 N.J.L. 578, 120 Atl. 188 (1923).*

In 1926 mesothorium and radium nechrosis were added. In 1931 the latter was amended to read radium poisoning. In 1945 dermatitis venenata was added. In 1945 silicosis and asbestosis were added as being compensable occupational diseases, with certain provisos. In 1949 the act was amended repealing the entire occupational disease section and substituting an entirely new section, *R.S. 34:15–31.* This amendment became effective January 1, 1950. At the same time cases of silicosis and asbestosis were left under *R.S. 34:15–31.* This latter section was amended and made effective January 1, 1952, making silicosis and asbestosis subject to the provision of *R.S. 34:15–31.*

In 1949 the New Jersey Legislature passed *L. 1949 c 29,* the preamble of which reads:

"The object of this bill is to make compensable all occupational diseases which are contracted as a result of exposure hazards in the course of employment. The inclusion of a list of specified occupational diseases, as has been the case in the past, requires an employee who contracts an unlisted disease to resort to the costly and uncertain remedy of a common law action against his employer. The amount of judgment against the employer might be large but the employee's recovery might also be defeated by common law defenses available to the employer. . . . If the State of New Jersey is ready to recognize as compensable certain occupational diseases, all occupational diseases resulting from exposure to hazards in the course of employment should be included. This would result in equitable application of the Workmen's Compensation Act."

In the case of *Dawson v. N. J. Brooke & Co., 134 N.J.L. 94 (Sup. Ct. 1946),* the employee who suffered from tuberculosis, had no remedy cognizable under the Workmen's Compensation Act. In the cases of *Capuano v. Wright, etc., 134 N.J.L. 339 (Sup. Ct. 1946) and De Maria v. Curtis Wright, (Sup. Ct. 1946) 134 N.J.L. 524,* employees sustained traumatic injuries with resultant disability, but were barred from recovery because their condition was occupational and not compensable under the occupational disease section as it was prior to 1949. These employees were left in a position where they could not be compensated in any manner for what were disabilities chargeable to industry.

Apparently the legislature recognized the inadequacy of the statute as disclosed by the preamble to *L. 1949 c. 29* and passed the present statute to correct the deficiency. Thus we reached a point in 1949 where an amendment was necessary. The legislature then saw fit to eliminate from the statute the listing of compensable occupational diseases, and adopted instead, language which would make the coverage all inclusive. New Jersey is not the only state in the country which has occupational disease statutes. Forty-two states have such a statute.

I think it is fair to assume that before the enactment of the present amendment a study was made of the statutes in other states in order to arrive at statutory language which could effect the purpose set forth in the preamble. A survey of the various laws discloses that 3 states include their occupational diseases under the word "injury," that 25 states have a list of occupational diseases, and that some of them also have an omnibus coverage clause which includes any and all occupational diseases in addition to those listed.

Twenty-five states define occupational diseases with particular language. Alaska, Connecticut, Ohio, Michigan, Nebraska, Florida, Oregon, and Rhode Island have definitions of their occupational diseases in language almost identical in every respect to the language adopted by the New Jersey legislature in 1949. Nine states list only "chemicals" as occupational diseases, similar to New Jersey law prior to 1950. Fifteen states which list occupational diseases include those as the result not only of "chemicals" but also of mechanical trauma such as synovitis, tenosynovitis and bursitis. Bursitis is listed in 15 states as an occupational disease. This does not mean that only 15 states recognize bursitis as an occupational disease, but that only 15 states list it specifically.

The state of affairs resulting from

confusion and uncertainty, which might arise from using a list of diseases, was summed up very neatly by Schneider in his Workmen's Compensation Text, Section 926, page 501.

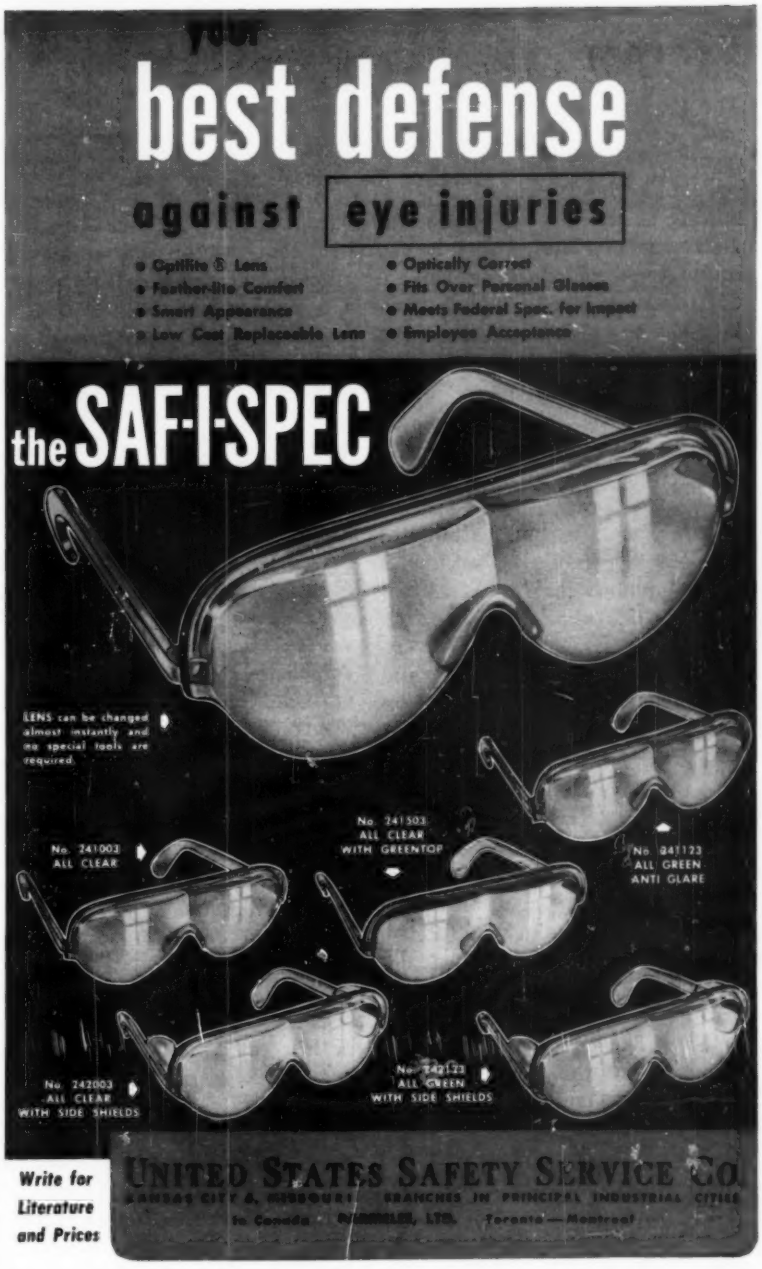
"A survey of all the American Workmen's Compensation Acts, as well as all the American decisions interpreting those acts with a view to determining whether the disability resulting from the disease in question is compensable under the particular act in question, prompts the observation that to designate in an act as compensable a limited number of occupation diseases, and excluding those not listed or designated, provides both a fruitful field of litigation as well as injustice to the disabled worker and undeserved profit to the consumer at the expense of the disabled worker."

The uncertain state of affairs spawned by the complex legislation of many of the states was succinctly pointed up in the Fordham Law Review, Volume 4, page 147:

"It is submitted that the Legislatures of the various other states should rescue their respective courts from the dilemma into which the occupational disease question has plunged them, preferably by providing compensation for all diseases incurred in the course of and by reason of one's employment."[4]

Act's History

Therefore, tracing the history of the Workmen's Compensation Act in this state, coupled with the preamble to the latest amendment, and recognizing that New Jersey had the benefit of observing and studying the Workmen's Compensation Acts of all the other states which had been in effect and tested for many years prior to 1949, it is reasonable to conclude that the legislature chose words to render New Jersey's occupational disease statute all inclusive, in simple language, so that the rights of an injured worker could be determined without complicated litigation, and further, that the injured worker should not be thrown into a no-man's land, where his industrially incurred disability could be classified as neither fish nor fowl.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Interpretation of *R.S. 34:15–31*

R.S. 34:15–31 states:

"For the purposes of this article, the phrase 'compensable occupational disease' shall include all diseases arising out of and in the course of employment, which are due to causes and conditions which are or were characteristic of and peculiar with a particular trade, occupation, process or employment, or which diseases are due to the exposure of any employee to a cause thereof, arising out of and in the course of his employment."

Since the passage of the 1949 amendment 3 cases have explained and interpreted the language of the statute. The first case was *Stepnowski v. Specific Pharmaceuticals, 15 N.J. Super. 495 (App. Div. 495)*, the second case was *Bonder v. Sim-*

mons Co., and the third *Fernandez v. Kiernan Hughes Co., 23 N.J. Super. 394 (County Court 1952).* The Stepnowski case is very important. Prior to the opinion in this case, there was a wide difference of opinion, both by the bar and the bureau, as to what the terms "all diseases arising out of and in the course of employment, which are due to causes and conditions characteristic of or peculiar with a particular trade, occupation, process or employment," meant.

There were many of the opinion that more than one employee has to be affected to satisfy the statute. There were others of the opinion that only one had to be affected to be within the statute. It was always my opinion that the number was immaterial. Fortunately for the employee, the Compensation Act extends its benefits to the weak and strong alike. *Swift & Co. v. Von Volkum, 131 N.J.L. 83 (Sup. Ct. 1943).*

In the Stepnowski case, the petitioner suffered permanent injury as a result of the cumulative effect of inhaling and absorbing dust particles containing female sex hormones. Suit was brought in the law court. The defense was that the law court had no jurisdiction and that the occupational disease statute applied. The reply to this contention was that the disease was not peculiar to the employment because no other workman had been affected by the inhalation of the particles. In disposing of this contention, Mr. Justice Jacobs then speaking for the Appellate Division, on page 499, said:

"Under the express statutory definition, an employee's disease, which results from . . . his inhalation and absorption of dust particles (containing sex hormone) in the course of his employment, at his employers chemical plant, would constitute an occupational disease without regard to whether the risk of the disease was generally known. See *Telenko v. Wilson H. Lee Co.*, supra, where Chief Justice Malthie in discussing occupational diseases under the Connecticut Workmen's Compensation Act pointed out that an award is not precluded because the risk is one which has not become generally recognized or because only employees unusually susceptible will suffer from it."

So we readily see that Mr. Justice Jacobs in citing the *Telenko v. Wilson etc.* case, recognized that the rule as laid down in the *Swift & Co. v. Von Volkum* case that the benefits extend to the weak and strong alike.

In the next case decided, *Bonder v. Simmons Company,* compensation was awarded in the bureau and on appeal to the higher courts, was affirmed. In that case the employee was required to push a lever with his right hand some 500 to 700 times a day. He suffered injury to his right shoulder and right arm. The doctors made a diagnosis of bursitis. The Appellate Division held the petitioner's condition was occupational and was compensable under the terms of the amendment of 1949.

Another important decision in the Stepnowski case was made by Mr. Justice Jacobs. He stated:

"The plaintiff contends that his disease and injury are not within the generally recognized risks of the defendant's trade and that consequently he did not suffer an occupational disease within the language of the court in *Bollinger v. Wagaraw Building Supply Co. 122 N.J.L. 512 (E & A 1939).* There, although Chief Justice Brogan at one point expressed the view that an occupational disease 'is one that from common experience is visited upon persons engaged in a particular occupation in the usual course of events,' he recognized that it 'is one that is incidental to the employment itself.' The Bollinger case was decided a decade before the passage of *L. 1949 c. 29* and its definition of occupational disease, if in anywise inconsistent, must give way to the definition embodied in the later statutory enactment."

Many cases of importance have been decided in other jurisdictions, which indicate the trend toward extending the benefits to the working man. Some examples are (1) back strain, *Buchanan v. Bethlehem Steel Co. 101 N.Y.S. (2nd) 1011; aff'd 100 N.E. (2nd) 45 (1951);* (2) varicosities, *Vines v. Lazar Motors, 100 N.Y.S. (2nd) 735 (1950);* (3) enlarged heart, *Eckert v. Commander Larabee Mfg. Co., 101 N.Y.S. (2nd) 860 (1951);* (4) the contraction of tuberculosis by a telephone operator through contact with an infected mouthpiece, *Mason v. Y.M.C.A. 68 N.Y.S. (2nd) 510 (1947) leave to appeal denied 297 N.Y. 1037;* (5) the contraction of tuberculosis by nurses, *Atfen v. State, 229 Minn. 488, (1949);* (6) Dishwashers in hospitals, *Mills v. Detroit Tuberculosis Sanitarium, 323 Mich. 200 (1948).*

The bureau and the courts have on the whole exerted their powers in the direction of order, consistency and logic, and with an appreciation that, while the Workmen's Compensation Acts were designed for the benefit of the employee, the rights of the employer must also be considered. On this point it is appropriate to quote from the case of *Pacific S.S. Co. v. Pillsbury, 52 Fed. 2nd 686,* a phrase well worth preserving as expressing a sane view with regard to the general interpretation and enforcement of the Compensation Act:

"The act in question is wise in its conception and beneficent in its operations. It must be interpreted and enforced with such care that it shall not be an agency of unfairness either to the employer or to the employee. Its careful and fair administration is the best guaranty of its performance."

Bronchiectasis—An Occupational Disease

An occupational disease may be compensable even though it is a disease which the general public may acquire under ordinary conditions, if in fact it is causally connected to the hazards of the claimant's employment.

Hacker, a milling machine operator, was assigned to the operation of 2 large milling machines which were used to cut off ends of cast

(Continued on page 47)

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- ☐ drying of walls, sheets, etc., after treated with coating material

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Company .....

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Write here any special ventilating problem you may have { _____ _____

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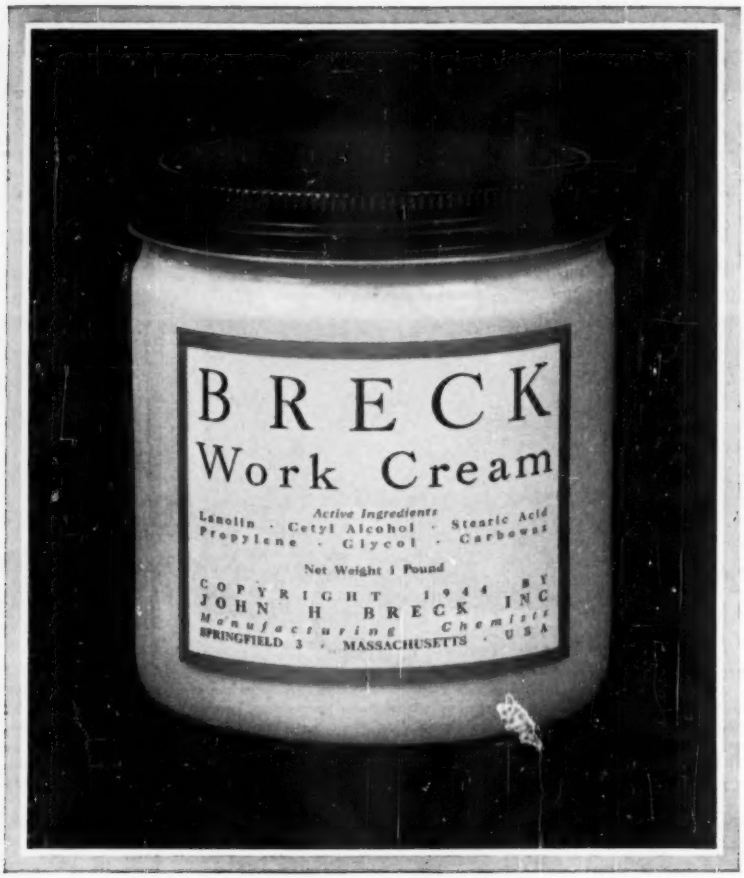

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Industrial Hygiene

Associate Editor
Jacob A. Goldberg, A.M., Ph.D.

National Safety Congress Discusses Industrial Hygiene Problems

DURING the National Safety Congress sessions in Chicago many hygiene problems, old and new, were taken up. New solutions to these problems were advanced, and old solutions were viewed from fresh angles.

More than 100,000 Americans are totally blind, more than 425,000 are blind in one eye, and 20,000 more are being added to the partially blinded every year. These figures were cited by J. L. Guiher and I. F. Shephard, of the supervisional training division, Goodyear Tire & Rubber Co. The speakers then demonstrated that the eyes are one of the best protected parts of the body, and all individuals must do is exercise a little common sense and use man-made protectors to protect themselves.

In reviewing the progress made in industrial vision programs in the last 10 years, Dr. Hedwig S. Kuhn, ophthalmologist and former secretary of the Joint Committee of Industrial Ophthalmology of the American Medical Association, said the variety of visual skills needed in industry is endless and that even one-eyed persons are preferable in some jobs. It's important, however, that the man's visual capabilities match the job's demands.

The days of memorizing eye charts are past, Dr. Kuhn said. Modern visual testing instruments and techniques evaluate 5 basic skills: distance vision, near vision, muscle balance, color vision and stereopsis (two-eyed correlation). These skills cannot be memorized, so an accurate evaluation of each employee's visual capacity is recorded.

One out of every four persons can benefit his own general well-being, increase his productiveness and be freer from accidents by improving his visual performance, asserted R. A. Sherman, visual engineer of the Bausch & Lomb Optical Co.

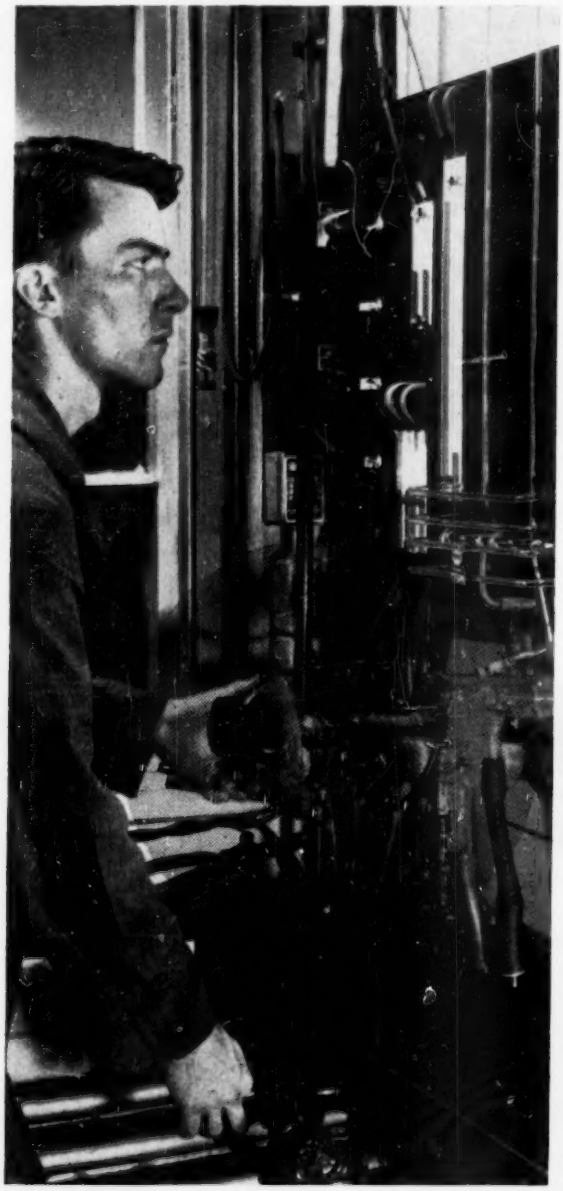
Fourteen years of research has revealed that 40 percent of all workers lack the proper vision for their jobs, that 66 percent of workers below average in efficiency have inadequate vision, and that 90 percent of workers with below standard eyes can be brought up to par. Mr. Sherman told the Congress that there are several reasons why one out of four who need eye care do not get it. The main reason is lack of awareness of the need. The public's idea that as long as eyes don't hurt they're efficient, reluctance to wear glasses, and an idea that 20-20 distance vision is all that's necessary are other contributing factors, he concluded.

Noise Protection

How industry is lending an ear to its own noises in order to protect worker's hearing was explained by

(Continued on page 43)

Laboratory technician tests dust respirator for breathing resistance. Different heights of water levels on panel indicate that wearer of respirator will be able to breathe comfortably through it.



GIVE THEM AIR!

By BENJAMIN F. POSTMAN *

FEATURE

First of a series of feature articles on Respiratory Protection. Next articles will appear in the January and February issues.

ADEQUATE protection against contaminated atmospheres represents a vitally important segment of personal protection. It is impossible to include all the protective devices available and in use in a single discussion. I will not, therefore, include equipment necessary for mine rescue or fire-fighting purposes, in covering protection in normal industrial operations.

Air Supplied Helmets

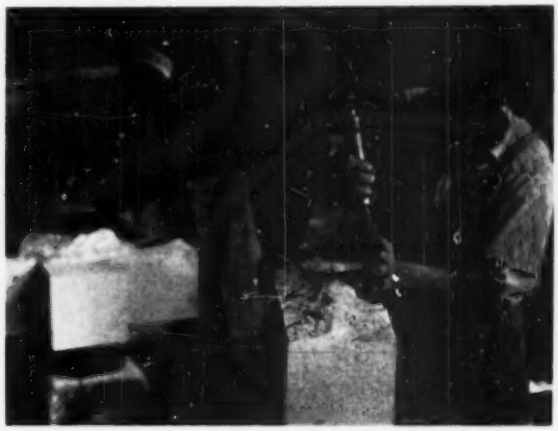
Until the appearance of the air-supplied helmet, one of the most serious exposures which resulted in the

* Mr. Postman is an industrial hygiene engineer for a leading insurance company.

development of silicosis was in the casting-cleaning or blasting room where sand-mold castings were cleaned of adhering molding sand. For years this was the lowest paid and dirtiest job in the foundry. Six months exposure in a blasting room where silica sand was the only type of abrasive, using a rag or handkerchief about the operator's nose and mouth for protection, was sufficient to produce a case of disabling silicosis within 15 to 20 years. If this did not produce death, tuberculosis, due to weakened lung tissues, brought death.

It is, therefore, with a feeling of reverence that we inspect a modern air-supplied helmet. If properly used, in casting-cleaning rooms the helmet will not expose the user to any dangerous concentration of silicious dust. While the use of steel grit or shot has further reduced the potentiality of silicosis, an air supplied helmet protects the operator irrespective of the type of abrasive used.

At present there are 15 types of helmets which have been approved by the Bureau of Mines. Blasting helmets are costly types of protective equipment. Wearers should be instructed not only how to use them, but how to store them when not in use. There is no reason



[illegible] operation. Note also safety gloves.

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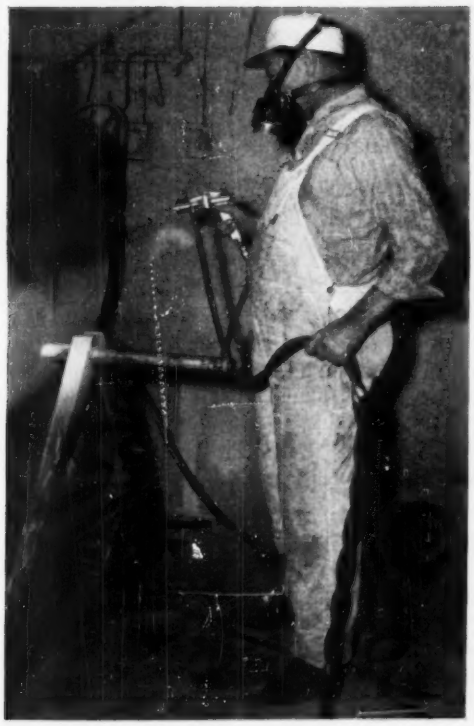

to find a helmet tossed into a corner of the blasting room or thrown on some sharp-edged castings. Some helmets are provided with suspension rings at the top of the head section, so that they may be suspended from hooks when not in use.

All air supplied to helmets should pass through a filter to remove oil fumes, moisture and other nuisance or toxic constituents common to compressed air lines. For example, an operator in a blasting room was found dead, presumably from carbon monoxide generated when oil-lubricated valves on a compressor become inoperative. For this reason, some blasting helmets are provided with air from separate pressure blowers, utilizing shop or outdoor air. One such unit not only compresses the air for the helmet, but cools it to remove the heat of compression, and washes and humidifies it. When helmets or other air-supplied units receive air which is too cool, chilling the head and face of the operator, an air-line electric heater may be provided to heat this air before it enters the helmet or mask.

Data relative to the normal air supply for each type of helmet should be obtained from the manufacturer. The wearer of the helmet should be instructed to regulate the air supply so he will always receive enough air to breathe.

Dust Respirators

It can be difficult to persuade personnel to wear respiratory protection. Personalized indoctrination in the reason for wearing respiratory protection is sometimes a necessity. Personnel should not be required to wear respirators for long periods. Local exhaust, either downdraft through floor grills or on benches along the wall, considerably reduces exposure to excessive dust concentrations.

Though portable grinding is considered a heavy duty operation, an analysis of excessive labor turnover may determine the cause to be unfavorable operating conditions. It should be remembered that dust produced from the abraded wheel, which may be aluminum oxide or carborundum, and the castings being worked upon, grey iron or steel, are so-called nuisance dusts and do not produce silicosis or tuberculosis. When bronze or brass castings are processed, there is the potentiality of lead exposure, due to the lead content of the alloys. However, the continual heavy dust concentrations produced by uncontrolled portable grinding units may aggravate a sinus, bronchitis or asthmatic condition, which may become compensable. The liberality of some compensation awards, based on aggravation factors, is becoming an important reason for protection.

A preventive cleaning, sterilization and maintenance program should be developed for all respirators used in a plant. This should not be left to the individual worker. A program of this sort is feasible in a moderate sized or large plant, but it has its inherent difficulties in the smaller plant. For this set-up, one intelligent operator can be assigned this work with an extra incentive. Facelet cloths should be provided for all respirators to reduce face rash in hot weather. Creams applied to cheek areas should also be provided for all personnel who use respirators.

Chemical Cartridge Respirators

An ever increasing field for the use of chemical cartridge respirators lies in spray coating operations. Depending upon operator technique and the units being sprayed, it may be mandatory to wear a respirator the entire working time. For example, flat surfaces, cabinets or refrigerators require close work and constant respirator use.

Some chemical cartridge respirators are provided with cotton buffer covers placed ahead of the replaceable chemical cartridge to catch pigment overspray. These pigments are usually non-toxic. Lacquers and synthetic materials sprayed in modern industry do not contain lead. Periodically, spurious claims for lead poisoning are reported, but only by those who know little about the specific items of industrial operations.

The function of the chemical cartridge is to remove a large percentage of the solvent vapors contained in the overspray. It is, therefore, the responsibility of the sprayer to change the cartridge as soon as he can smell solvent through the respirator. Inhalation of the solvent vapors without the protection of chemical cartridge respirators will cause headaches and in some instances, gastro-intestinal disturbances. Chemical cartridge respirators are to be used in atmospheres which are not immediately dangerous to life, and do not contain more than 1,000 parts of organic vapor in 1 million parts of air. Occasionally, determinations are made of vapor concentrations in a working environment to evaluate what type of respirator is required. However, practical experience of the plant or the extensive field experience of the technical representatives of the respirator manufactures are the best reliance for the proper type of equipment to be used.

Canister and Air Supplied Masks and Respirators

The use of this type of equipment is predicated upon requirements of the individual plant or industry. In the case of irritant gases such as ammonia, chlorine and formaldehyde, it is essential that the proper type of canister unit be located not only in, but adjacent to the potentially dangerous area. In an emergency, plant personnel will then be able to use the protective equipment quickly and easily.

Canisters should be date stamped upon receipt. If kept on a shelf in supply area, they should be changed every 3 years. If connected to a mask and not used, they should be replaced yearly. A record of the canister use may be kept on a 3" x 5" card inside the carrying case. On this card, may be listed the date, length of time in use, reason for use and the users name. Periodic inspection of these record cards may save a man's life. The mute evidence of a depleted canister cannot revive

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a life which has been needlessly sacrificed because someone "thought" the equipment was ready for an emergency. One manufacturer provides an automatic timer with a half-white and half-red indicating dial, which reveals at a glance how much service life remains in a canister. This mechanism is actuated only by the process of breathing.

Too much emphasis cannot be placed on proper canister equipment. Canister should not be used where there is a lack of oxygen. This requires an air-supplied mask or respirator, coupled with a safety belt and life line held by an operator outside the exposure area.

The preservation of lives is a serious responsibility. At no time should laxness be permitted or unofficially condoned in using personal protective equipment. Periodically the press reports deaths due to (a) lack of proper and adequate respiratory protective equipment, (b) lack of proper supervisory authority and (c) lack of personalized instruction regarding the potential hazards in an industry, plant, or operation.

All equipment necessary for proper functioning of full-face or respirator-type air supplied masks, such as hand, electric or gasoline driven air compressor units, hose and valves, should be thoroughly checked periodically. Such inspections should be recorded on the card previously mentioned, or on a special supervisor's form developed for the purpose. Nothing must be left to chance. Protection against mechanical and human failure is a problem which creates its own idiosyncrasies, which in turn are dependent upon the type of exposure, employee characteristics, supervisory activity and top management interest.

From an address delivered at the Greater New York Safety convention.

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Industrial Hygiene Foundation Meeting Presents New Industrial Health Data

A MEETING of great importance to industrial health activities has been held by the Industrial Hygiene Foundation. Some 600 management executives, physicians, engineers, toxicologists, chemists, attorneys and industrial hygienists attended the Foundation's 18th annual meeting and professional conferences.

More than 40 widely recognized authorities presented much outstanding new material in the industrial health field and exchanged information on specific problems encountered in a wide variety of industries. Keynote speaker was Vincent P. Ahearn, executive secretary, National Industrial Sand Association. The problem of human relations in industry received special attention as did noise and alcoholism.

The Engineering Conference included talks on principles of new plant design for health protection, discussions on new apparatus for collection of fumes from electric furnaces, and on mechanical arrangements for controlling dust and fumes. The Chemical-Toxicological Conferences presented specific topics on analyses of biological materials to indicate exposure to hazardous materials. The meaning of the problem of industrial noise to management was one of the features of the Legal Conference. Also included was a review of 1953 legislative changes in statutes providing compensation for occupational diseases.

Andrew Fletcher, Board Chairman of the Foundation, summarized the organization's activities during the past year. He is the President of St. Joseph Lead Company. Arrangements for the events were under the direction of Dr. C. Richard Walmer, managing director of the Foundation.

Industrial Hygiene Foundation is a nonprofit organization whose purpose is the advancement of industrial health. It is supported by 360 industries of all types throughout the country. As members of the Foundation, they receive the services of a staff of physicians, chemists, engineers, biochemists and medical technicians—all specialists in health problems arising in industry. The Foundation acts as a clearing house for assembling and disseminating information through the accumulative experience of its staff and the exchange of ideas of its member companies in annual meeting and conferences. The Foundation was organized in 1935 by a small group of companies to assist in solving the silicosis problem and has since had wide experience in the whole domain of occupational health.

The Industrial Nurse

Editor
Rosamond J. Webster
R.N., A.M., Ph.D.

Air Pollution

THE recognition of this severe problem in industrial plants and communities is many centuries old, though effective measures to control local situations have not been put into effect in many places. An English writer points out that in 1257 the then Queen of England was forced to leave Nottingham because of the coal smoke. The first smoke abatement law was passed in 1273—500 years before the birth of the United States!

Various communities in this country have made serious efforts to control air pollution. The pollution that long prevailed in Pittsburgh has produced fairly effective measures to reduce this health hazard. Smog in Los Angeles, the smog disaster that occurred in Donora, Pennsylvania in 1948, and other evidences have led to an intensification of governmental and private efforts to cope with the problems created by incomplete and wasteful burning; the lack of competent engineering guidance in various industrial processes; and the failure of professional personnel in some industries to focus attention on air pollution problems.

The smoky wastes of coal and oil burning and the incinerator disposal of garbage cause widespread air pollution about which the industrial nurse can do virtually nothing. She can, however, keep an adequate check on dust-producing industrial processes in her plant, especially if no safety engineer or other qualified person is assigned to that task. Bringing local or plant situations to the attention of the proper supervisory or management personnel can be a function of the industrial nurse.

Industrial Noises

NOISE is an important factor in industrial health because of its effect upon hearing, general health, and efficiency. The Industrial Hygiene Division of the New York State Department of Labor is preparing plans to study various noises in industry. The Division intends to study the origin of noise from every standpoint; to apply protective measures and to try to devise new methods to combat existing noise conditions. Much study is to be devoted to types of noise; their control and prevention; development of distinctions between occupational and non-occupational losses of hearing; the amount of hearing loss, if any, due to causes other than noise on the job; and determining whether impairment is temporary or permanent.

Aside from monetary losses to employers for workmen's compensation claims, the noise nuisance exacts other costs, including those from interference with communication in noisy work places. Working efficiency is seriously affected also. One study reported an increase in output of 3 percent when plant noise was decreased 15 percent by various measures. In another study the output of office workers was found to increase by 12 percent when noise dropped 22 percent. Noises are also conducive to fatigue because more intensive mental application is needed to focus attention.

Various noise preventive measures are available and the studies planned by the New York Industrial Hygiene Division should throw light on others. Industrial nurses, safety engineers, plant physicians and others can do something to help lessen noises in their plants. Planning is the key.

Rehabilitation

MANY methods and much money are being increasingly utilized to rehabilitate injured workers. Recognizing the responsibility of the medical profession in this field, the American College of Surgeons, through the committee on trauma, appointed a committee to set up standards to deal with the subject.

The following are the major recommendations made and later approved by the board of regents of the American College of Surgeons: (1) Rehabilitation of the injured worker and his return to gainful employment should be the basic concept in an improved workmen's compensation system. We should recognize that the

disabled worker wants to be restored to gainful employment. Settlement of cases on a basis of cash awards alone does not meet the continuing needs of the injured worker and his family. (2) The need for higher standards and broadened benefits in workmen's compensation is recognized. Such standards and benefits should be developed against the background of presently known advances in physical restoration and vocational rehabilitation. (3) Full utilization of all our potential manpower is essential to the welfare and strength of the country at all times. The discarding of disabled workers is obviously an economic extravagance detrimental to the welfare of our country. (4) The medical profession should adopt the concept that the responsibilities of the treating physician extend over the entire period of disability to the end that the patient is restored to gainful employment at his highest attainable skill. (5) Rehabilitation and restoration to gainful employment of the injured worker must begin with first aid and continue through the period of disability.

The physician must bring to bear on these problems all the skills and disciplines that science and society can offer, and utilize all community resources which can assist him in the accomplishment of these objectives. The committee set up these 5 basic principles and determined to give further thought to development of a specific program in the field of rehabilitation.

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Accident Attitudes

MANY causes have been put forward for industrial and traffic accidents. One phase not adequately emphasized has been personal attitude. The director of the traffic division of the National Safety Council has rendered a real service in drawing up a list of these attitudes which are directly related to accidents of all kinds.

The list includes the following: (1) Selfishness—the "me first" attitude responsible for much lack of consideration for others; (2) Self-importance—the idea that "I'm too big for rules—they apply only to the other guy"; (3) Overconfidence—"I'm good—I don't have to be careful—I know it all"; (4) Chance-taking—the "live dangerously" concept, sometimes involving great faith in luck—"It can't happen to me"; (5) Fatalistic attitude—you go when your number is up, and what you do doesn't make any difference; (6) Hostility—a constant unfocused feeling of anger towards others, resulting in an aggressive attitude; (7) Attitude of inferiority—"I won't be pushed around"; (8) Competitiveness—trying to get ahead—to beat the other fellow; (9) Unconscious self-destruction—an attitude frequently noted by psychologists—a need to injure yourself; (10) Exhibitionism—showing off; (11) Pleasure in destruction—a personality maladjustment in which pleasure is derived from destroying things; (12) Transfer of guilt—creating situations in which blame can be placed on others, thus relieving feelings of guilt on the part of the instigator.

Safety is recognized as primarily a problem of people. No matter how much care is taken to safeguard workers, unless their basic attitudes towards their jobs, their supervisors, fellow-workers and the public are sound, accidents will happen. It should be a simple matter to list the preceding attitudes, perhaps add others, and check off those observed in accident prone workers. This could help safety directors, medical and nursing staff to deal with troublesome personalities.

Repeated Teaching

LAENNEC, the famous French physician who invented the stethoscope, wrote to his cousin, "Do not fear to repeat what has already been said. Men need these things dinned into their ears many times, and from all sides. The first version makes them prick up their ears, the second registers, and the third enters."

Industrial nurses, physicians and others constantly give medical, health, safety and other advice and instructions, but they often forget that such verbal or written information may not actually enter the mind of an individual, and having entered, may not be understood. Those who have dealt with large numbers of patients in hospital out-patient departments recog-

nize this. Health education, nutrition advice, medical information and instructions—if they are to be effective—must be stated in simple terms, may require written as well as verbal instructions, and repeated questioning to determine if the person understands what is meant and is competent to carry it out.

National Safety Congress

(Continued from page 35)

W. F. Scholtz, supervisor of industrial hygiene for Allis-Chalmers Manufacturing Co. He told the Congress that a program was started with a spot check of the plant, a complete sound level survey of the plant, and a pre-employment hearing test for all new employees. Results indicate that 25 percent of the applicants already have some type of hearing loss. When an employee is found to have a "noise-susceptible" ear, fitted ear protection is prescribed. If this proves inadequate, he is transferred to a less noisy location.

Ordinarily, battling a heat wave is a summer proposition. In some industries, however, it's a year round job. Three methods of getting heat relief in industry were described by Bartlett R. Small, staff engineer of the Aluminum Co. of America.

Unfavorable working conditions may be caused by radiant heat or hot air around furnaces, kilns, heat treating rooms, etc. To make workers more comfortable, one of three methods can be used—high rate of ventilation, reflective shields or spot cooling. Shielding and insulation are ways to control radiant heat. Ventilation, air conditioning and spot cooling, are the control methods for hot air.

Electric shock may someday be used to save the lives of persons who have suffered electric shock, predicted Dr. E. W. Miller.

"Within a very short time," he said, "some type of electrical apparatus will be developed to stimulate respiration. It is extremely satisfactory on animals, but the experimenter hesitates to apply it to humans."

The idea of giving a patient a shock identical to the one he had received to restore him to normalcy was first expounded in Austria in the early '30s, said Dr. Miller. The technique was used recently in a Milwaukee hospital on a patient who had suffered surgical shock. After all other available means had failed to revive the patient, an apparatus was used which resuscitated him successfully.

The "9-to-5" Florence Nightingale came in for rightful recognition at the National Safety Congress. "Industrial nursing is equal in importance to any branch of nursing" said Dr. Frederick W. Slobe.

Tracing the development of the nurse's role in occupational medicine, Dr. Slobe mentioned these highlights: in 1882 the first major medical care plan was established by the Northern Pacific Railway Beneficial Association; in 1895 a U. S. company first hired a nurse for the benefit of employees, and in 1911 industrial nursing as an organized activity was begun by the Visiting Nurses Association of Chicago.

From these beginnings have come developments which are taken for granted today. Workmen's compensation laws, employment of the handicapped, and greatly-expanded study of occupational injuries and diseases were cited as some of the outstanding benefits.

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Scientists Will Discuss Relation Of Visual to Job-Performance

THE integral relationship between on-the-job efficiency and visual performance will be discussed by a panel of experts at the annual meeting, later this month, of the American Association for the Advancement of Science. Participating in the discussion will be industrial representatives and vision specialists experienced in testing techniques, according to panel chairman Dr. N. Franklin Stump of Bausch & Lomb Optical Company's occupational vision department.

Dr. Stump says tests show that "from 30–45 percent of all employees fail to measure up to visual standards required for their particular job. What's more surprising," he adds, "is that a majority of persons who fail are totally unaware of their visual limitations."

Over 200 universities and colleges now include instruction in visual performance testing as part of their business and industrial curricula.

Static Electricity

(Continued from page 27)

It might be expected that the greatest static charge occurs during violent agitation. This is not the case. On only two tests did a slight charge develop during agitation. The heavy static charges on the oil surface developed immediately after agitation was stopped and gradually diminished during the settling period of 5 to 10 minutes. The most severe static charges developed during the settling period following the water wash. Lesser charges developed during settling of the "doctor solution." It was also found that heavier oils tend to generate greater charges than lighter oils, although all charges were severe during settling, regardless of the type of oil.

The results of these tests should be very significant to those handling petroleum products. Any oil containing water or foreign particles is likely to cause static charges on a free oil surface when discharged into a tank. By the same token, a tank containing water that can be stirred up by filling operations or any form of agitation, can generate static on a free oil surface. This is fact and not theory, and may provide a clue to the cause of fires or explosions for which no reason is apparent.

Tank trucks whose tanks hold oil containing water, or water at the bottom, will generate static charges on the surface of the oil when the truck stops and the oil-water mixture is quieted, allowing the water to settle out. If the oil containing water, or any water that has settled out, is unloaded into another tank the water will then settle out and generate a charge on the free oil surface of the receiving tank. No doubt this phenomenon is responsible for many explosions and fires during transfer operations.

Grounding

The flow of oil in pipes will generate small amounts of static, but sensitive instruments are required to detect it and it is not of serious import. Friction between truck or automobile tires and pavements will generate static electricity and charge the body of the vehicle. It is, however, a simple and easy operation to remove a static charge from a metallic object such as a truck or a tank since it can be insulated from ground. Bonding and grounding operations are, therefore, fairly well standardized. Incidentally, drag chains on trucks are beginning to be recognized as useless devices, although still required in several states.

Tank Grounding

In connection with bonding and grounding the question of tank grounding should be discussed. The wire required to drain off static charges could be quite small and of high resistance. However, for mechanical strength, wires used are of substantial size. Wires for grounding as protection against lightning, on the other hand, are large because lightning discharges run into thousands of amperes for a few microseconds. Exceptionally heavy lightning strokes, which have been known to burn through quarter-inch steel plate, may account for some tank fires caused by lightning.

Tanks that rest on the earth or on concrete rings are well grounded. This has been established by ground resistance tests with all piping disconnected. The resistance to ground for a 30 by 40 foot tank on concrete rings and sand fill is equal to 6 ground rods.

The major problem of dealing with charges on a free oil surface is a problem of trying to ground an insulator. All the grounding and bonding of the tank shell and roof does not alter the charge on the oil surface inside the tank. Various proposals for disposing of oil surface charges have been made.

Eliminate the free oil surface by having a closed system whereby there would not be a free oil surface, say some. This is in effect short-circuiting the surface area; but it is not practical because tanks must be filled and emptied, and hence cannot operate with a full system.

The installation of an umbrella of wires from the bottom to the top of the tank, thereby short-circuiting the charges on the oil surface, has been suggested. This actually has been tried by some companies, but it only reduced the charges slightly and possibly invited greater hazard. Charges must be removed from every part of the oil surface before a surface can be said to be free of charge.

A proposal has been made to ionize the atmosphere above the oil surface with X-rays or radiation from radio-active materials. This is another method of short circuiting the oil surface, and a tricky and difficult procedure.

Blanketing the oil surface and vapor space with steam, is still another idea offered. Although this method is used in agitator treating, it is undesirable for general application.

Introducing an inert gas in the vapor space above the oil, has been studied. This would not eliminate static but should be effective in preventing ignition. General application would be costly.

Finally, there is the proposal to maintain the vapor space mixture above the oil surface so rich that it will not ignite. This method appears quite sound. The materials for this method are right at hand in the tank. All that remains is to develop the system. It is quite probable that numerous explosions and fires do not occur because the mixture is too rich. It is difficult to suggest a practical method for eliminating a static charge on a free oil surface. The best idea is to try to avoid the admission of air.

Superstitions

A notion about static electricity that appears to have wide circulation in the industry is that, during steaming out the inside of tanks, clouds of steam become separated inside the tank and static sparks jump from one cloud to another in a manner resembling a summer

"SAFETY MAINTENANCE" Salutes a Safety Idea

Safety Device for Construction

A PORTABLE rolling scaffold, consisting basically of a plank with rollers attached to the bottom, is making roof work easier and safer at the Torrance, California plant of The National Supply Company.

The scaffold is used by workers putting studs on roof purlins preparatory to new roof installation. Previously, when it was necessary to replace worn corrugated metal roofing, a man had to stand on the slippery iron sheet, bend over open space, and reach out 2 feet or more to put the studs in place. This was not only dangerous, but also very slow and tiring for the roofer.

Martin Kvilvang, an employee of the company for more than ten years, designed the scaffold which is now in use. The rollers, on the bottom of the scaffold, are spaced so that the whole contrivance rolls along the roof purlins. A piece of board, mounted on an angle, serves as a seat for the workman, and compensates for the slope of the roof. Seated on the scaffold, the workman pushes himself along with his feet, and has only to lean forward to use the stud gun. His material is handy in the boxes in front of him.

(Continued from preceding page)

thunderstorm. A recent series of tests for static charges inside several sizes of tanks during steaming out operations finds no basis for this idea.

It is true that static charges can result from steaming operations. However, unless there exists, inside the tank, some isolated metallic object that can become charged, there is apparently no hazard. The idea of a thunderstorm effect inside a steaming tank is a fantasy.

These facts about static electricity observed over a number of years, should help solve specific static problems.

From an address delivered at the 29th annual Midwest Safety Show.

...if only for THEIR sakes

...learn how to protect yourself from death from cancer. They need *you!*

And for your sake and theirs you must keep on remembering that the best cancer "insurance" is:

FIRST... *to make a habit of periodic health check-ups no matter how well you may feel, always including a thorough examination of the skin, mouth, lungs and rectum and (for women) the breasts and generative tract.*

SECOND... *to learn the seven danger signals that may mean cancer, and go straight to the doctor at the first sign of any one of them—(1) Any sore that does not heal (2) A lump or thickening, in the breast or elsewhere (3) Unusual bleeding or discharge (4) Any change in a wart or mole (5) Persistent indigestion or difficulty in swallowing (6) Persistent hoarseness or cough (7) Any change in normal bowel habits.*

For other life saving facts about cancer, phone the American Cancer Society office nearest you, or address your letter to "Cancer"—in care of your local Post Office.

American Cancer Society

Learning . . . . . the hard way

NO BETTER THAN ITS FOOTING . . .

LADDERS are no exception to the rule that tools are no better than the way they are used. Handled improperly or asked to do jobs they weren't meant for, they become dangerous. In this case, the ladder was set up on ground uneven in density. When the workman mounted the ladder one of its legs sank and threw him to the ground. Terra firma can be treacherous. The best thing to do when mounting a ladder, is to put weight on both ends of the bottom rung before ascending. If you are working outdoors examine the ground for holes and soft spots. If the surface is soft toenail the ladder to a wide board placed under both feet of the ladder. If proper precautions are not taken climbing a ladder can be more dangerous than climbing a mountain!

OUT OF TUNE!

EQUIPMENT seldom goes to pieces all at once. It may seem to, but careful inspection will almost always reveal danger signs before collapse occurs. Take the case of a 450 rpm water wheel driving a 30,000 kw generator at a power station. This wheel suddenly exploded, sending one 2½ ton piece through the station roof and causing 250,000 dollars damage. Luckily no one was hurt. The report on the accident showed that one bucket on the wheel broke off when a crack in the metal, which had been there for a long time, suddenly gave way. The loss of the bucket unbalanced the wheel, setting up a vibration that destroyed it. Earlier inspection should have revealed the crack and repairs should have then been made. Caught early, the imperfection would never have led to a serious accident. "For want of a nail" . . . etc.

CONVICTED!

STATE safety codes have grown in scope and strictness over the years . . . and, just as important, they have grown in strength and enforcement. The penalties for flouting safety practices are becoming more severe. Punishment alone will, of course, not produce safety; but it will draw attention of employer and employee alike to the fact that safety is a serious matter which cannot be passed off as an exercise for "do gooders."

Recently a construction worker in a West coast state was killed in the collapse of a trench. State industrial safety engineers found that the trench had not been adequately shored and braced in compliance with the state trench safety orders. The company and foreman were brought to trial for violations of the safety code which led to the worker's death. They were both convicted and fined 250 dollars each. The sum may seem comparatively small, since their negligence led to a man's death. However, the important point is that this prosecution and conviction were the first recorded in the state! No longer can the safety code be looked on as "just another bunch of legal words."

IMAGINATION . . . FORESIGHT . . . PLANNING . . .

ONE of the best ways to prevent accidents on the job is to think out what you are going to do before you do it. It goes by a lot of names: vision, foresight, imagination, understanding, etc. It all boils down to being able to figure out what will happen if you do so and so instead of such and such.

For example, 2 employees had been bending pipe in a pipe-bending machine powered from a truck wheel. After completing the job they prepared to disconnect the drive shaft from the truck wheel. The man directing the job sat down on a surplus electric motor near the truck wheel to loosen the bolts which connected the drive-shaft assembly to the wheel. At the same time, he instructed his helper to lower the hydraulic jack holding the truck wheel clear of the floor, without realizing that his leg was under the drive shaft. As the relief valve on the hydraulic jack was opened and the truck wheel came down, the drive shaft caught his left leg just above the knee. Due to the position in which he was sitting it was impossible for him to free his leg until the truck wheel was jacked up again.

Job-planning, on any level, means understanding what will happen if something is done and avoiding the dangerous way of doing it.

What's the Law?

(Continued from page 32)

iron bars. The bars were painted with a paint composed of 6 percent zinc chromate. Zinc chromate, it has been proven, may break down into various oxides, including chromate oxide, which can be very irritating to the lung tissues. The room in which Hacker worked housed other dry grinders which used neither oil nor wet solutions and were not equipped with blowers. As a result of the lack of any ventilation, Hacker was exposed to an area that was constantly filled with dust fogs laden with iron dust.

He became unable to work, and his symptoms included dizzy spells, numbness of limbs, weakness upon exertion, insomnia, sharp pains in the chest and frequent coughing. Several physicians testified during the hearing that the dust irritations caused the inflammation of Hacker's lungs; that the inflammation itself was a disease to which bronchiectasis was incidental; and that an operative removal of the diseased area was required to effectuate the injured's cure.

Under the Occupational Diseases Act, where the workman's surroundings and conditions of employment possess inherent risks, dangers, and hazards which are not present in other employments, and he contracts a disease due to such hazards which furnish the cause of the disease, compensation is afforded. Held compensable. *Hacker v. Schwitzer-Cummins Co., No. 18, 341. May 6, 1953. Indiana Appellate Court.*

For seven months immediately prior to May 7, 1943, Tirelli worked as a concrete driller for the contractors for dry docks without using a face mask. He became ill of silicosis as a result and left his employment for another type of work. In 1945, two years after he had ceased working at concrete drilling, he became totally disabled and in the following year, he died.

Tirelli's death was held compensable as it occurred "within 5 years following continuous disability from such disease," as provided by the Workman's Compensation statute. The decedent's "last work" in connection with silicosis was his work of drilling concrete. *Tirelli v. Contractors For Dry Docks, New York Supreme Court, Appellate Division, Third Judicial Department, No. 213–3. November 17, 1952.*

Avoidable Accidents

Joe X worked in a machine shop. Quitting time was 5:00 P.M. and his firm allowed 20 minutes "wash-up" time. At 4:30 P.M. on a certain day, Joe's foreman noticed that he was all dressed and ready to go and his machine had been shut down. The foreman told him his machine should be going to 4:40, and told him to start it up again. Joe was too lazy to take off his coat and roll up his sleeves. He started up his machine and 2 minutes later his sleeve had caught in the machine. In a matter of seconds, Joe lost his right hand. All this could have been avoided—Don't you agree?

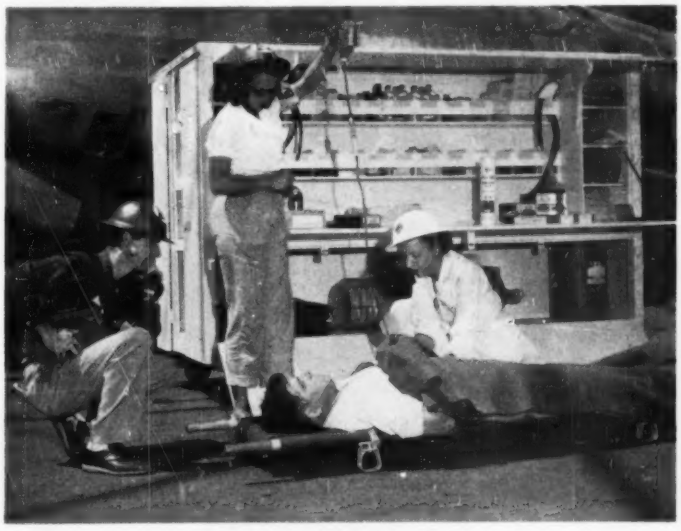
NOTE: The editor will publish cases of avoidable accidents giving due credit to the person and firm sending them in. Let's hear your experiences.

Purdue Calls Conference On Industrial Recreation

THE eighth annual Industrial Recreation Conference will be held at Purdue University on February 14, 15, and 16, 1954 under the sponsorship of the industrial and community recreation section of the School of Science, Education, and Humanities and the Division of Adult Education.

Outstanding leaders in the field will discuss special problems and the latest developments in the organization and administration of industrial recreation programs. Ample opportunity will be afforded each delegate to present individual questions or problems.

Representatives from business, industry, and public and private agencies throughout the United States and Canada are invited to attend. Reservations may be made and information obtained by writing the Industrial Recreation Conference, Division of Adult Education, Purdue University, Lafayette, Indiana.



READY FOR INJURY!

Mobile first aid station, shown here in civil defense drill, is one of several installed in Consolidated Vultee Aircraft Corporation plant in California. Inexpensively built wooden unit has hinged sides which open quickly and provide additional space for easy dispensing of medical supplies. Doors at end of unit open on cupboards for storing stretchers. Supplies kept in the unit include plasma, simple instruments and applicators, basins, towels, blankets, many kinds of bandages, medicines and drugs, tourniquets, slings and assorted dressings. In case of accidents within the plant the mobile unit in an important link in the first aid chain. First, stretcher teams render on-the-spot first aid and bring the victim to the mobile unit. The attendants at the mobile unit give more complete first aid and dismiss him if no further attention is needed. If the injury is serious the stretcher team moves him to an ambulance.

Picture by courtesy of Consolidated Vultee Aircraft Corporation.

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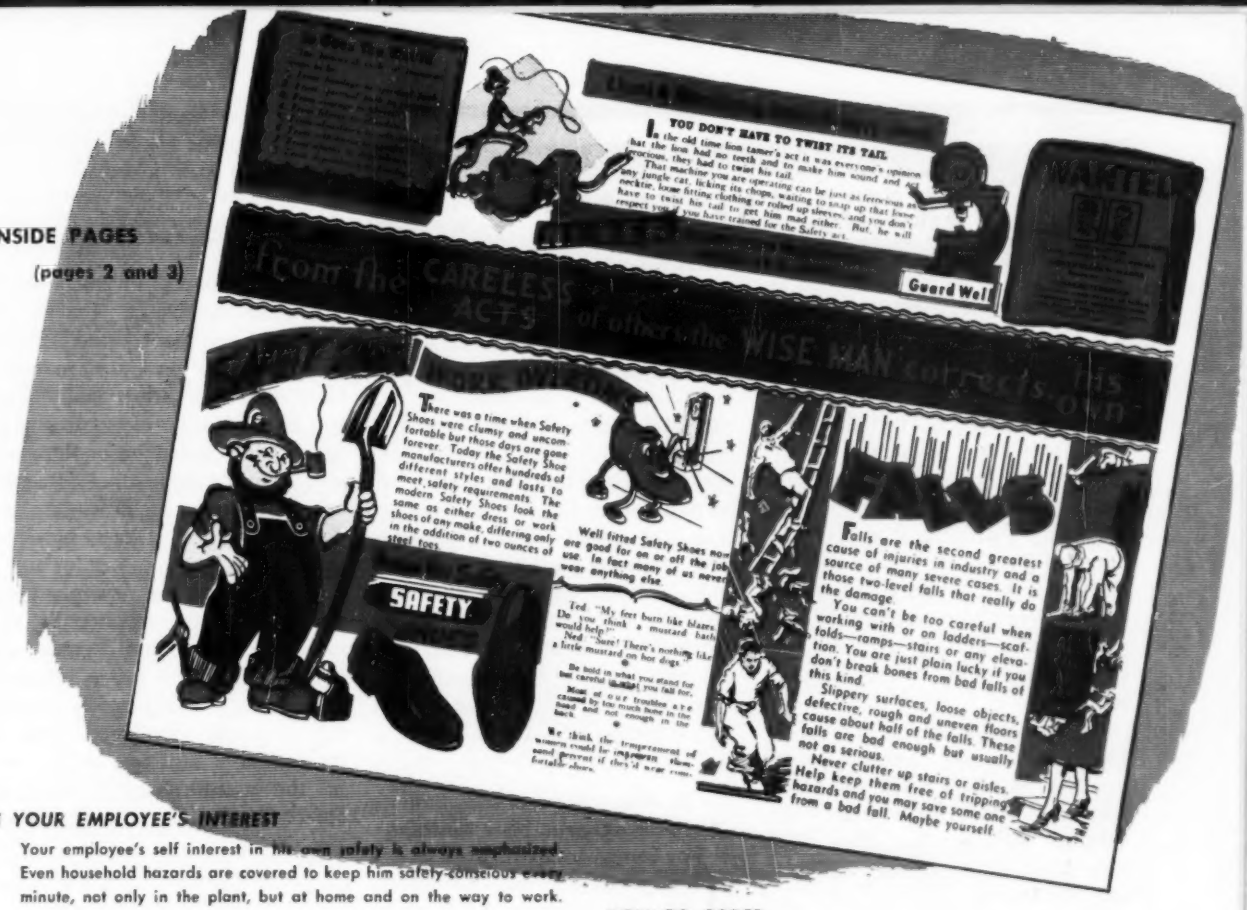
Your Signature Here

NOTE:
Nothing of a controversial nature that might offend or embarrass either management or labor is ever published in YOUR SAFETY NEWS!

INSIDE PAGES
(pages 2 and 3)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Guard Well
From the CARELESS ACTS of others the WISE MAN corrects his own
SAFETY
There was a time when Safety Shoes were clumsy and uncomfortable but those days are gone forever. Today the Safety Shoe manufacturers offer hundreds of different styles and lasts to meet safety requirements. The modern Safety Shoes look the same as either dress or work shoes of any make, differing only in the addition of two ounces of steel toes.
Well fitted Safety Shoes now are good for on or off the job use. In fact many of us never wear anything else.
Ted "My feet burn like blazes. Do you think a mustard bath would help?"
Ned "Sure! There's nothing like a little mustard on hot dogs."
Be bold in what you stand for but careful what you fall for.
Most of our troubles are caused by too much bone in the head and not enough in the back.
We think the temperament of women could be improved somewhat if there'd ever come portable shoes.
FALLS
Falls are the second greatest cause of injuries in industry and a source of many severe cases. It is those two-level falls that really do the damage.
You can't be too careful when working with or on ladders—scaffolds—ramps—stairs or any elevation. You are just plain lucky if you don't break bones from bad falls of this kind.
Slippery surfaces, loose objects, defective, rough and uneven floors cause about half of the falls. These falls are bad enough but usually not as serious.
Never clutter up stairs or aisles. Help keep them free of tripping hazards and you may save some one from a bad fall. Maybe yourself.

IN YOUR EMPLOYEE'S INTEREST

Your employee's self interest in his own safety is always emphasized. Even household hazards are covered to keep him safety-conscious every minute, not only in the plant, but at home and on the way to work.

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Artwork is carefully chosen to lodge home each point. The cartoon style makes YOUR SAFETY NEWS as familiar and as welcome as the Sunday supplement.

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*Extra each plus $3.00 per month for Special Imprint F.O.B. New York, N. Y.

INSIDE THE TRADE

MSA Appoints

MR. Charles H. Myers has been appointed Assistant to the Manager of the Mining Department of Mine Safety Appliances Company, Pittsburg, it was just announced by C. M. Donahue, Vice President. Mr. Myers, who has been with the company since 1939, formerly was a mining sales engineer in the Fairmont, West Virginia, area.

To replace Mr. Myers in the Fairmont territory, the company has appointed M. E. Condit, who was stationed in MSA's Pottsville, Pennsylvania mining sales office. The new MSA sales engineer in Pottsville is W. C. Endean, who had been with the company's International Department.

Clark Office Moves to Atlanta

JOHN J. SHAND, Southeastern Regional Sales Manager of the Clark Equipment Company, has moved his headquarters from Norfolk, Va., to 161 Spring Street Building, Atlanta, Ga. The Clark Equipment Company manufacturers industrial fork-lift trucks, towing tractors, straddle carriers, and other materials handling equipment.

Ansul Relocates Buffalo Office

DOUBLING its warehouse capacity, Ansul Chemical Company, of Marinette, Wisconsin, pioneer producer of dry chemical fire equipment, has moved its Buffalo office to 902 Kenmore Avenue. The former location was 1432 Hertel Avenue. Lester J. Wiechers, district manager, and Omar Lane represent Ansul in Buffalo and western New York.

Distributor for Parker Sweeper

ADDITION of Shipping Utilities, Inc., 3107 Pine St., St. Louis, to its distributor group has been announced by Parker Sweeper Co., Springfield, Ohio, manufacturer of Parker Industrial motorized and manual mechanical floor sweepers and Fold-A-Way utility carts. The franchise includes Central and Eastern Kansas and Missouri, and will be handled out of that company's St. Louis, Wichita, and Kansas City, Kansas, offices.

Aerovent Opens New Building

THE Aerovent Fan Company, Inc. has announced the opening of its new general office building at 700 East Ash Street, Piqua, Ohio. An impressive brick and stone structure, it is built on the site of the original offices of the Company.

In other improvements completed simultaneously with its new offices, Aerovent has increased factory floorspace and expanded its facilities for storing parts and accessories used in the construction of more than 20 types of industrial fans and ventilating equipment currently produced at its Piqua plant.

Grinnell Installs Pyrene Air Foam Systems

AIR foam fire extinguishing systems designed and manufactured by the Pyrene Manufacturing Company, Newark, N. J., are now offered for sale and installation through the nationwide organization of the Grinnell Company, Inc., Providence, R. I.

The non-exclusive arrangement with Grinnell does not alter the sale of Pyrene air foam systems, mobile and portable equipment through Pyrene's own district offices and air foam jobbers.

Bustin Companies Move

BUSTIN Steel Products, Inc., manufacturers of Truck and Trailer Equipment, and Bustin Firm-Grip Grating Corp., manufacturers of "Firm-Grip" Safety Gratings announce the removal of facilities to the first section of their new modern plant on a seven acre plot, near two main highways in Randolph Township, Dover, New Jersey.

The site for the new plant was selected for its exceptionally well located transportation center, and the availability of heavy industrial power which is required for operating a newly developed type of multi-spindle resistant welder used in the assembly of "Firm-Grip" Safety Grating. Previous location of the two companies was at 110 East 130th Street, New York 37, N. Y.

Ansul Appoints C. Victor Mars

MR. C. VICTOR MARS has been named vice president in charge of research and development for Ansul Chemical Co., Marinette, Wisc. Mars' 22-year career with Ansul includes service as a research chemist, refrigeration and industrial chemicals salesman, manager of product development and director of research and development.

New Hillyard Manager For Milwaukee District

MR. Jarvis Gafford has been appointed District Manager for the Milwaukee territory by the Hillyard Sales Company (Eastern) manufacturers of Floor Treatment Products. Gafford, a trained floor expert, joined the Hillyard staff in the late thirties and was formerly with the Company's Chicago office.

His services will be available to staffs of Wisconsin hospitals, schools, institutions, also industrial, commercial, government, public and private buildings of every type, architects and contractors. In this

capacity, he will be available for free advice and help on any floor problem; for floor surveys of entire buildings; actual "on job" assistance to men responsible for maintenance. His Milwaukee business address is Room 208, 312 E. Wisconsin Ave., Milwaukee 2, Wisconsin, telephone, Broadway 2-2410.

Solvent Label Sells Safety

"FOR Your Safety" is the headline which greets the user when he opens a drum of solvent produced by John B. Moore Corp. In bold, black type on "Caution" yellow background, the label enjoins against careless use of any solvent, tells precautionary measures to avoid dermatitis, fires and toxic risk from fumes and, urges him to call his safety engineer for counsel.

Clark Changes Dealer Organization

CLARK EQUIPMENT COMPANY has revamped its dealer organization in the midwest to handle its newly-acquired straddle carriers and fork truck lines. Under the new plan Clark dealers will add these products to their regular sales and service activities.

Elwell-Parker Names Treasurer

WILLIAM H. CAMPBELL has been elected treasurer and assistant secretary of The Elwell-Parker Electric Company, manufacturers of power industrial trucks. Mr. Campbell, a C.P.A., previously held the position of Assistant Controller for Willard Storage Battery Company.

Ansul Opens New Office

ANSUL Chemical Company has opened a new office and warehouse at Kansas City, Missouri. The new building at 3301 Gillham Road, is headquarters for the sale of the company's dry chemical fire equipment, refrigeration products and industrial chemicals in the Southwest.

September Fire Losses Up 16% Over 1952

ESTIMATED fire losses in the United States during September amounted to $68,613,000, it is reported by the National Board of Fire Underwriters.

According to Lewis A. Vincent, NBFU's general manager, this loss represents an increase of 16.4 percent over losses of $58,949,000 reported for September 1952, and a decrease of 36.3 percent from losses of $107,713,000 for August, 1953. The latter month had one exceptionally large loss and is not considered to be a basis for comparison.

Third Quarter Losses

Losses for the first 9 months of 1953 now total $683,345,000 an increase of 17.5 percent over the first 9 months of 1952. These estimated losses include an allowance for uninsured and unreported losses.

WHITE FLOORS STAY WHITE

NOW with White ONEX-SEAL

A Finish that makes White Cement • Terrazzo Magnesite • Marble

WHITER

● The specialized sealing and finishing method recommended by Cement manufacturers and the National Terrazzo and Mosaic Ass'n. to preserve and maintain original color and maximum light reflection of white floors in INDUSTRY — for increased production, and reduced accidents.

No Waxing!
No Yellowing! Stops checking and efflorescence!
Makes "seeing" easier for workers!

Months of Wear! Minutes of Care!

We believe there's never been a seal that protects like ONEX-SEAL. And now Hillyard chemists, after months of work, have given original ONEX-SEAL a whitening power that avoids yellowing in bringing dirt-marred white floors to gleaming whiteness—an important factor, since discoloration in *white* cement is not only unsightly, but can decrease its reflecting value as much as 18%. ONEX-SEAL applies quickly, penetrating into the pores—and when buffed after drying has a high lustre—achieving a slip-resistant finish that needs no waxing, can be maintained "dry" with only occasional mopping. When cleaning is required use Onexite, a white pigmented neutral cleaner specially formulated for white floors.

. . . On your staff not your payroll

WRITE TODAY FOR DEMONSTRATION ON YOUR FLOORS

FLOOR HILLYARD TREATMENTS

ST. JOSEPH, MISSOURI

(For further details, use Key # M-22 on free Inquiry Card on page 73)

NOW...the first safety-perfect dry chemical fire extinguisher

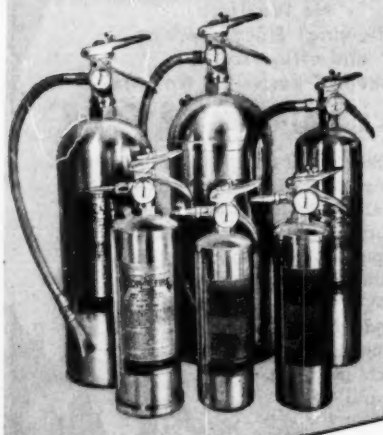
the "REDI-FLO" *MARK II*®

featuring revolutionary "Spheral Valve" Design

When you squeeze the grip of the one-hand operated "Redi-Flo", Mark II, you get *action*—a powerful, instant flow of fire-killing dry chemical that streams out fast and freely—*without fail!*

With new, exclusive "Spheral Valve" Design, Stop-Fire rules out all possibility of extinguisher failure due to clogging or jamming of the valve. When fire occurs, you're *never* left holding an extinguisher that refuses to operate. Dry chemical particles can't possibly foul Stop-Fire's "Spheral Valve", nor can accidental distortion of the valve mechanism possibly interfere with valve operation. In fact, the "Redi-Flo", Mark II, may be partially discharged over and over—even with this "stop-go" action, it never hesitates or fails. *When you reach for the "Redi-Flo", Mark II, you KNOW it will go!*

Safety-Perfect in Every Respect—Investigate the "Spheral Valve" (Patent Pending) and the 7 *other features* for Safety-Perfect Performance offered by the "Redi-Flo", Mark II. Write Stop-Fire for all the facts today!



For *safety-perfect* dry chemical fire protection, insist on Stop-Fire's *safety-perfect* "Redi-Flo", Mark II!

Now available in 3, 5, 10 and 20 lb capacities (4 lb and 30 lb units available shortly)

Approved by Underwriters' Laboratories, Inc.

YOURS FOR THE ASKING!

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"Redi-Matic" Systems for Automatic Fire Protection • Foam • Soda-Acid Water Cartridge-Operated • Carbon Dioxide • Pump Type Extinguishers

(For further details, use Key # M-23 on free Inquiry Card on page 73)

The Fire Front

New Fire Problems Attacked At National Safety Congress

FIRE prevention received its share of attention at the National Safety Congress. New hazards and new developments occupied an important place in the 5-day program.

Mathew M. Braidech, research director of the National Board of Fire Underwriters, pointed out that the destruction of nearly 200 manufacturing and mercantile establishments a day demands greater attention to fire by everyone interested in the nation's well-being. Mr. Braidech outlined present advancements in fire extinguishing efficiency and emphasized the need for long-range planning by management to meet the trend toward structural "bigness" and increased concentration of values.

He observed that these conditions, accompanying the nation's advancing technology, multiply the risks of fire and promote its severity and gross destruction. A case in point, he noted, was the recent multi-million dollar fire at the General Motors Hydramatic Transmission plant. The loss exceeded 50 million dollars —more than the total for the 80 largest fires and explosions of 1952.

Several factors should be considered to gain a proper perspective on fire's destructiveness. No two fires are alike. A thousand different situations of fire and explosions have been found, involving ordinary combustible and flammable liquids and their vapors, gases and dusts, including pressure rupture and vacuum collapse of equipment. A small fire must be quickly detected and promptly controlled, or it can easily become large enough to destroy a whole plant. Fire damage is not limited to burning. Other equally serious destructive effects are smoke and water damage, spoilage by contamination and exposure, breakage from falling debris and structural collapse, thermal deformation and distortion of precision machinery.

In addition, the loss of vital business records, engineering data, dislocation and transfer of skilled and trained workers, good will and prestige in a competitive market, and the inconvenience of rebuilding and obtaining machinery replacements, make fire indirectly more destructive than ever.

Mr. Braidech urged that every attempt be made to provide the necessary preventive and protective engineering at the blue-print stage to minimize and control the danger potentials. He also called for greater alertness to new hazards, increased attention to the growing dimensions of the more common hazards of fire, and the development of special training programs to meet situations with unusually high risks.

"Present advancements in fire extinguishing," Mr. Braidech concluded, "have provided sufficient equipment and techniques to adequately safeguard practically all existing hazardous operations."

Investigations

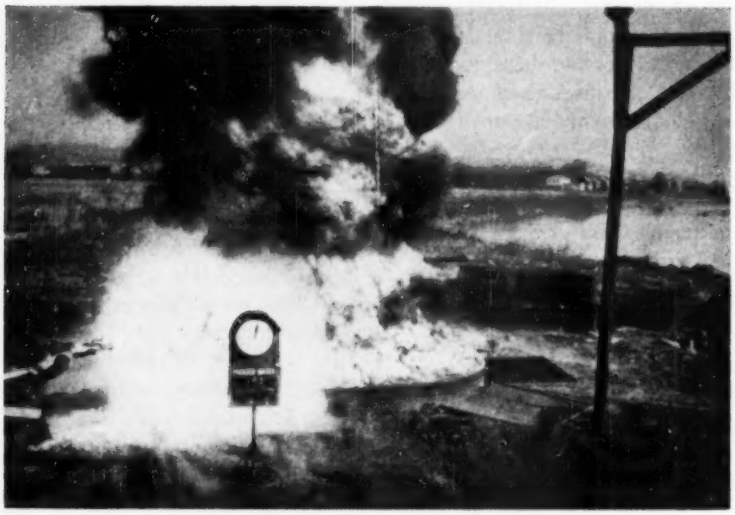
A plea for more careful investigations of fires was made by John J. Ahern, director of the department of fire protection and safety engineering at Illinois Institute of Technology, Chicago. He listed the two main reasons for such investigations. They will discourage the "criminal" arsonist who sets a fire deliberately and the "involuntary" arsonist who allows a fire hazard to exist despite repeated warnings and recommendations. They will provide data to enable the engineering changes necessary to be made.

Mr. Ahern defined a fire cause as "the action or lack of action which brings together combustible material with a source of ignition." He said available statistics show fire causes listed as "flammable liquids, welding, smoking and matches, etc." This type of tabulation does not fit the definition and does not help much in trying to improve fire records.

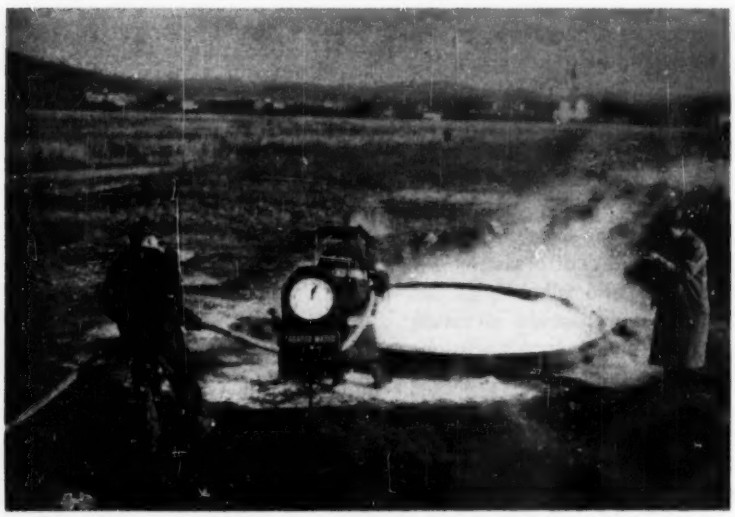
"No matter how susceptible to ignition a material may be, it can be safely handled by an engineering approach which will eliminate all sources of ignition," he explained. Although no two fires are alike, there are certain basic things which will help locate the cause, added Mr. Ahern.

(Continued on page 56)

Fifty-five gallon gasoline pan is permitted to burn before use of extinguisher.



Cloud formed by wet water applied to fire gives excellent personnel protection.



Wet water completes extinguishment of gasoline fire in 1 minute and 5 seconds.

WETTER

By NORMAN H. DAVIS, JR.
Executive Engineer,
Underwriters' Laboratories, Inc.
Chicago, Illinois

APPROXIMATELY five years ago an organization submitted their wetting agents for examination and testing. These products are non-flammable liquid chemicals especially compounded to improve the efficiency of natural water as a fire extinguishing medium for Class A and Class B fires. Although wetting agents are available from other manufacturers, the information contained in this article is based on the tests of this one company's products because they are the only wetting agents submitted to our laboratories for examination.

When a certain percent of the wetting agent is poured in water, it decreases the surface tension of the solution, facilitating appreciably greater surface contact and penetration.

In the first test of these penetrants at Underwriters' Laboratories, 600 pounds of oak mill slabs were arranged in the shape of a cone 4½ feet in diameter at the bottom and 2½ feet in diameter at the top. The penetrants (in proportion of 1 percent) were premixed with plain water in a large pressure tank, later pressurized for discharge. In order to standardize the test and eliminate the human element, fixed piping and nozzle systems were used. One system was for the penetrant solution and the other for plain water, and great care was taken to avoid contamination of the plain water system with the wet water.

Each test was given a preburn of approximately 15 minutes, the actual time being determined by the temperature of the wood pile. When a temperature of 1400 degrees F. was reached the water was turned on. Visually there was very little difference between the two tests.

WATER SHORTENS FIRES

However, here is the big difference. One hundred and seventeen gallons of plain water were applied for 6 minutes and 35 seconds before the fire was considered to be out. Eighty gallons of wetter water were applied for 4 minutes and 20 seconds, at the same rate as plain water, before the fire was considered to be out. Fire extinguishment was determined not only visually, but also by observation of reduction in temperature.

Large Scale Class "B" Combustibles

A test fire pan presenting a fuel surface area of 113 square feet was used. The depths of the fuel (gasoline) ranged from ¾ of an inch to 2¼ inches. The first two tests used fixed nozzles 78 inches and 31 inches directly above the fuel surface and plain water in one case and wetter water in others. Two to three times as much plain water was used to extinguish the fire and from two to three times the amount of time was required.

The third series of tests consisted of hand application using a 1½ inch hose. In the first test 55 gallons of gasoline was ignited and given a preburn of 1 minute. Using plain water the fuel burned out under controlled conditions before the fire could be put out. This lasted approximately 19 minutes. In the next test 110 gallons of gasoline were poured in the test fire pan. Using a 1 percent solution of the wetting agent, applied at the same rate as the plain water in the previous test, the fire was put out in 5 minutes and 24 seconds using 468 gallons of the extinguishing agent.

Large Scale Class "A" Combustibles

In another test 600-pound high compression bales of cotton were ignited with a blow torch over 5 exposed surfaces. A preburn of more than 2 hours was permitted on each sample. The fire was extinguished by application of 6.9 gallons of wetter water except for several spots on the underside of the bale. Twenty-four hours later 5 additional gallons of wetter water was applied to the same bale, effecting complete extinguishment. Under the same conditions, another bale required 19.3 gallons of plain water which apparently extinguished the flame. However, 24 hours later the bale reignited and an additional 380 gallons was applied through a 1½ inch hose line without effecting extinguishment. As a result 14 gallons of wetter water was applied a few hours later, finally extinguishing the fire.

Many other Class "B" fire tests were conducted using rubber tires, kerosene, N-butyl acetate, asphalt, etc. In every case the wetter water put the fire out in considerably less time and used considerably less water. The plain water in most cases only reduced the fuel-burning rate without extinguishing the test fires.

Effects on Equipment

Another test was set up to discover the effect of wet water on personnel, metals, cotton rubber-lined fire hose, linen fire hose, and automatic sprinklers. No noticeable adverse effects to personnel could be found due to contact with wet water.

The effect of wet water on metals, cotton-jacketed rubber-lined fire hose, and on linen fire hose is no more pronounced than that of distilled water. Long contact of steel with wet water or distilled water causes deterioration in the form of pitting. Observations of automatic sprinklers for 15 months gave evidence of slight creepage in sprinklers with paper gaskets at the cap, but no evidence of creepage or leakage was found in sprinkler samples assembled with metal gaskets. All threaded joints in group assemblies were tight. There was no evidence of deterioration due to contact of the bronze in the sprinklers with wet water.

Test Conclusions

The following conclusions were developed from observations made during the tests and study of the data obtained.

The penetrants tested can be readily mixed with normally avail-

FEATURE

Fourth article of a series on Fire Prevention. The first three articles appeared in the September, October and November issues.

Picture shows bale in which fire was extinguished by 6.9 gallons of wet water, except for several spots on the underside of the bale. Next day an additional 5 gallons of wet water were applied effecting complete extinguishment of the fire.

Application of 19.3 gallons of plain water apparently extinguished the fire in this bale, but the next day it had been reignited. An additional 380 gallons of water, which was then applied, failed to extinguish the fire. Fourteen gallons of wet water were then applied and finally completed extinguishment of the fire.

able plain water. No difficulty was experienced at any time during the tests in premixing the penetrants in plain water during winter weather or summer weather at water temperatures normal for the seasons. Cloth wetting tests of each lot of wet water before use, whether freshly mixed or not, indicated that pouring the required penetrant into plain water and stirring briefly with a wooden paddle was adequate. The tests also showed acceptable wet water could be made by this mixing method with water at normal temperatures met with in city supplies. When the wet water stood unused for a period of time there was no noticeable tendency for the wetting agents to settle out of solution. Premixing is practical where equipment such as booster tank and pump arrangements, fire department equipment, hand pump tanks, etc., are available.

In fire tests of asphalt, the penetrant was successfully introduced into the plain water stream by a proportioner now under development. Proportioners will likely be commercially developed for continuous introduction of wetting agents in proper proportions to water flowing under pressure in pipe and hose.

Storage temperatures should be above 40 degrees F. to avoid freezing and to keep the agent in liquid form for immediate use. If exposed to temperatures below 40 degrees F. the solution can be returned to its original state by slight agitation after increasing the temperature to approximately 60 degrees F.

Two forms of the wetting agents, in 1 percent solution, gave excellent results on Class "A" fires. A 2 percent solution of one form was effective for Class "B" fires.

The rate of application of the extinguishing agent has an important effect on the time required for putting out the fire and on the amount of agent used. Results indicate that application rates of the tested wet water of 0.05 gallons per minute/per square foot for Class "A" fires and from 0.4 to 1 gallon per minute/per square foot of fuel surface for Class "B" fires are effective. One per cent solutions of the penetrants are effective in putting out fires in rubber tires.

Fire tests were conducted satisfactorily in temperatures ranging from 90 degrees F. to 25 degrees F. The same care was taken to avoid freezing as with plain water.

Pictures by courtesy of Underwriters' Laboratories, Inc.

Fire Front

(Continued from page 53)

Fire tends to sweep upward until it meets an obstacle, and it is helpful in tracing a fire to its origin, to note the signs which show its direction of travel. Such information, plus a knowledge of the combustible material and the source of ignition, will make it possible to put together the circumstances which brought the material and the source together, he explained. The problem of how the fire began could be determined at this point—and this is the critical point, because many, if not most, studies stop here. From here we must learn "why," he asserted.

Many headline disasters such as factory explosions and warehouse fires may be avoided, because explosion-proof electrical equipment is now available to provide more safety in hazardous locations. This was disclosed by A. F. Matson, chemical engineer of Underwriters' Laboratories.

"A given area or location may be hazardous from a fire and explosion viewpoint," Mr. Matson said, "because of the presence of either flammable gases or vapors, combustible dusts or easily-ignited fibers or flyings. Atmospheres containing dust of aluminum, magnesium or their commercial alloys are flammable. Dusts from carbon, coal or coke, flour, starch and grain are also flammable when mixed into the atmosphere in the right proportion."

The National Electrical Code sets up specifications for explosion-proof electrical equipment. To qualify, equipment must be so constructed that gas or vapor-air explosions occurring inside will not ignite surrounding gas or vapor-air mixtures. In a fan-cooled, explosion-proof motor for instance, joints and shaft openings must be of adequate width and close clearance to prevent flame from reaching the outside atmosphere. Explosion-proof electric fixtures utilize metal-to-metal or metal-to-glass joints for the same purpose. Rigid conduit with explosion-proof joints also are required to be used in hazardous locations.

"Most persons have no difficulty understanding how a switch or other arcing device may ignite gas," declared G. M. Kintz, chief of the accident prevention division of the Bureau of Mines, "but very few understand how flame or gas can travel through conduit from one point to another and cause a disastrous fire or explosion."

H. F. Browne, a petroleum engineer also with the U. S. Bureau of Mines, demonstrated with graphs and simulated explosions how a flame travels through a conduit or any confined space and builds pressure ahead of it.

41st Safety Congress

(Continued from page 15)

housekeeping; encouraging employee suggestions; publicizing good safety records of individuals and departments; maintaining, analyzing, and making recommendations concerning major and minor injury reports to prevent recurrence of injuries.

A department store approach to small plant safety was recommended by Earl Aspinwall, personnel manager of the Creamery Package Manufacturing Co.

Like January inventory sales and July clearances, a specific safety theme is emphasized according to the needs of the season in the plant.

When employees are vacation-minded, bulletin boards carry reminders of highway dangers. Good housekeeping is emphasized in the plant during the month of May, the traditional housecleaning month at home.

Industry has been fighting accidents on only one front. A second front in safety, Homer T. Fort, publications director of the Magnolia Petroleum Co., said is needed to stop "the terrible toll of off-the-job accidents." For every disabling in-

jury inside the gates of industry, there have been 3 outside.

How can industry help check these injuries? By backing highway planners, supporting law enforcement groups, and by working with any group that concerns itself with off-the-job accidents, Mr. Fort suggested. He added that safety education on the job should be so good that it will put "a safety groove in employees' conscious minds that will stay with them after the whistle."

"The price of industrial accidents cannot really be measured in any other terms than their effect on people," was the opinion of M. B. Gordon, supervisor of employee services in the engine and foundry division of the Ford Motor Co.

"All employee safety activity is designed to prevent the mental suffering that every injured person experiences when he comes to a full realization of total blindness or complete paralysis of his limbs," he explained, "Money seems pretty insignificant when you look at it from the viewpoint of the injured man."

Handling People Safely

Employees being trained to instruct others in accident prevention should first subject themselves to very serious self-analysis, D. H. Platt, accident prevention and health specialist of the U. S. Bureau of Mines, declared. Each man must be convinced that he has the necessary knowledge and will to undertake the job of training others. He urged a lot of preliminary planning to make every instruction session as fruitful as possible.

"The safety engineer, or safety manager, is a specialist in a field which is as broad as industry itself, a composite of myriads of specialties," according to Stanley F. Spence Safety Director of American Cyanamid Company.

Mr. Spence defined the head of a plant safety department as "not an inspector, nor a pure design engineer, nor a scientist, nor a methods man, nor a public relations man, but a *management* man, combining the special skills of these specialties in their proper proportions in one man-sized package."

He then listed 9 qualifications of a good safety engineer: a good engineering or technical background in academic training and practical experience; a knowledge of his plant from A to Z; an understanding of the fundamentals of the operations conducted in the plant; knowledge of plant systems and procedures; "know how" to develop specific systems and procedures necessary in his program, and to integrate them with plant policy; liking for people and a hankering to know what makes them behave as they do; the ability to instill in people the desire to avoid accidents; imagination, and an anticipation of accident problems; a finely-developed sense of relative values.

The industrial supervisor must be diplomat, engineer and psychologist all rolled into one pointed out Karl

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(For further details, use Key # M-24 on free Inquiry Card on page 73)

R. Brunt, supervisor of education and training, Jones & Laughlin Steel Corp.

"There is a great body of clinical evidence to show that personality factors, problems of conflict and frustration are important causes of accidents," Mr. Brunt said. It's the supervisor's duty to study his workers to guard against these emotional upsets.

The industrial foreman must also be something of a psychiatrist, because human understanding is the key to reduced accidents, John W. Kunker, western region supervisor of the Baltimore & Ohio Railroad, explained in his address.

"We have witnessed the transition of emphasis from conditions to practices," he said. "Now, the emphasis must of necessity move to that more difficult area of human interests, understanding and behavior."

A training program for supervisors was suggested which would deal primarily in human relations. When an attitude is anti-social, belligerent, resentful, cynical or any of countless variations, all the skill and training in human understanding available to interpret the symptoms and get at causes and effects must be employed. Mr. Kunker indicated that leaders trained along the lines of human understanding would encourage participation by everyone in safety programs.

"The man most likely to have an accident is one who is unhappy, worried, careless, inattentive, or easily distracted, disgruntled and rebellious, irresponsible, individualistic, and who has an unusual amount of resentment against persons in authority."

How to spot him was described by Dr. Raymond H. Fletcher, psychiatrist of the firm of Rohrer, Hibler and Replogle. He advised listening to the man talk to discover personality traits.

"The things which a person may say and do cannot be measured by test," Dr. Fletcher declared, "and being a good listener is an important psychological aid to people who must exercise judgment about others."

Research and Plant Control

Safety engineering has failed to keep pace with other engineering fields in research, according to John J. Ahern, director of the department of fire protection and safety engineering at Illinois Institute of Technology. Mr. Ahern estimated more than 3 billion dollars will be spent on research and development in the United States during 1953.

"I am embarrassed to even speculate as to the infinitesimal proportion of this figure that will be spent on safety problems," he declared. "The stumbling block has been a lack of strong interest and support from industry regarding research on safety problems. This, in the last analysis, is the colleges' fault and reflects a failure to impress on employers the importance of finding solutions to many technical safety problems."

There's little use in trying to promote safety in a plant that isn't designed for it in the first place; the Congress heard from R. E. Redfield, supervisor of maintenance of the Socony-Vacuum Oil Co.

"Lower installation first-cost is not necessarily the economical one in the design of new plants," he declared. "Any premium paid for quality materials and good design is quickly recoverable in improved working time and lower operating and maintenance costs."

A good safety record is one way of making a good impression on customers, employees, the community, industry, competitors, stockholders and government, Don Knowlton, of Hill & Knowlton, public relations consultants, told the Congress. The best way to set up amicable public relations is by cooperating fully to disseminate accurate and authentic information. News is something important and unusual. Accidents and fires fall under these classifications. Therefore, it is evident that they must be reported, according to Mr. Knowlton.

It is difficult, on the other hand,

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to make news out of near-misses and avoided accidents, but with a little ingenuity it can be done. He cited the case of an "Armadillo Club." Membership was earned by men who might have been injured or killed by falling objects if they had not been wearing safety helmets. Publicity given these men had a constructive slant since it emphasized the importance of wearing safety gear.

Various sectional meetings discussed the particular problems of specific industries and areas of safety in more detail. Some of these discussions follow.

Machine Guarding

Uniform standards for machinery guarding are needed to promote safety, Floyd E. Frazier, industrial division director of the accident and fire prevention department of a leading insurance association, told the Congress. He said that "in a study of one particular industry it was found that, although machinery was the source of only about 15 percent of all injuries, these injuries accounted for more than 50 percent of total losses."

Mr. Frazier suggested this indicated the need for guards. The need for uniform standards, he continued, is indicated by the fact that machinery manufacturers contend guards cannot be included as standard equipment because of conflicting state standards.

Robert Snyder, electrical engineer for the Goodyear Tire & Rubber Co., disclosed that his company has developed electronic safety devices that shut off machinery if a man only gets close to danger. The new "proximity safety" operates merely by the approach of any part of the body near the danger point, he explained.

Petroleum

The days when men were men and accidents were plentiful are gone forever in the oil fields. G. H. Barnes, district superintendent of the Shell Oil Co., related incidents in the "old days" of riggers standing on their heads on the top of derricks to settle bets, and races to the top of derricks, with one man climbing the bracings while the other used the ladder. Men got reputations as "he men" for doing these dangerous and foolhardy stunts in those days, but, the emphasis now is on saving lives, not risking them.

The multi-million dollar expansion program now going on in the petroleum industry is a good opportunity to raise safety standards by instituting a program of engineering for safety. R. J. Hargrove, supervisor of maintenance engineering with Socony-Vacuum Oil Co., suggested safety start from the moment a plant and its equipment is designed. Future safe operation and maintenance can be built into a plant, he added.

A safety program in which death enforces the rules, and a fascinating story of the year-round fight with nature to get petroleum out of northern Canada, were described by D. L. Cuthberth, safety director of

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Water-Cooled Respirator
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Imperial Oil Co. In latitudes of 55 and 60 degress north, where the company has drilling operations, the temperature varies from zero, or slightly above, to as low as 60 degrees below zero. Occasionally, during the coldest weather from November to March, the temperature may stay at a "warm" 35 or 40 degrees below zero for as long as 3 or 4 weeks. Snowfall varies from year to year and from place to place. On the plains drifting complicates drilling; in the bush areas, the snowfall is very heavy. Snowplows are standard equipment, and extra food must be kept on hand at the rigs for emergencies. Roads are often blocked 2 or 3 days at a time.

"Our company does not let men travel alone in winter in remote areas," Mr. Cuthberth explained. "An extra person to help with shoveling or to give an extra push may mean the difference between getting through or staying put. If a vehicle is snowbound and the motor kept running to provide heat, two men can talk or take turns sleeping. There is less danger of being overcome by carbon monoxide. No extra efforts or programs have to be devised to make men abide by safety rules."

Mining

Coal miners and operators have their disagreements, but not on the subject of safety, reported H. A. Schrecengost, supervising inspector for the U. S. Bureau of Mines.

More than 31,000 miners in the anthracite regions of Pennsylvania have completed a special course of safety training in the last 5 years. The demand for this training has increased to such a degree that as many as 6 full-time instructors, teaching 2 or 3 classes a day, are required, Mr. Schrecengost said.

An underground school in Butte, Montana develops "green" manpower into safe miners. Lester Bishop, assistant research engineer of the Anaconda Copper Mining Co., explained that all newcomers to mining work are trained in a student mine. Under the guidance of a shift-boss, the men are schooled in excavation, timbering, handling ore and filling. Training is under actual conditions since the mine is an operative one. When the student has completed the course, he is graduated to a regularly operating mine with an experienced crew. Here he undergoes further training with new equipment and modern mining methods.

The new technique of roof bolting has decreased the hazard of roof falls in coal mines, increased the value of coal reserves and improved operating efficiency. Andrew Gracie and Joel N. Van Sant, general manager and chief engineer, respectively, of the St. Louis, Rocky Mountain & Pacific Mining Co., described operations in a mine where faults and shale make the roof areas of the coal seams treacherous.

To combat these conditions, the company is now using the technique of roof bolting. Bolts 5 and 6 feet long are driven into the roof with special equipment. An air impact wrench is used to tighten the nut after the bolt has been expanded in its anchorage position. This process builds up a beam of interlocking keystones in the form of a primitive flat arch which supports the roof.

The bolts also eliminate timber roof supports. These obstructions not only present a safety hazard, but also slow down production. Because of the old method of shoring, much coal had to be left because recovery was uneconomical and in some cases impossible. Roof bolting increased the value of coal reserves in this mine by 25 percent by permitting the extraction of top coal safely.

Coating coal mine roofs to prevent hazards caused by "sweating" was described by an engineer from the U. S. Bureau of Mines, C. A. Herbert. Mr. Herbert explained that, when moisture gets behind shale, it expands and contracts with temperature changes and causes the rock to fall away. Roof coating protects miners from injuries which could result from rock falls. A compound containing a thinner and a fibrated asphalt mixture is sprayed on the

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roof areas subject to moisture. This compound fills any cracks and fissures and prevents moisture from getting inside.

A new development in coal mining facilitates production with no loss of safety for miners. Irving Hartmann, physicist, and Bernard Lewis, chief of the explosives and physical sciences division of the Bureau, reported experimental results with short-delay multiple blasting. Some advantages of this method are that miners are not obliged to re-enter repeatedly the duty atmosphere, and are not exposed so frequently to roof falls. The Bureau of Mines officials explained that, while not constituting endorsement by the Bureau, findings appear to substantiate advantages of short-delay multiple blasting in coal mines.

"Rock bursts" as an operating problem in deep metal mines and in some coal mines were discussed by P. J. Shenon, consulting geologist. In general, he said, most rock bursts occur below 2000-foot depths. Caused by the sudden release of stresses in rocks, they set up tremors which may disturb the natural "set" of other rocks in excavated areas.

Although they cannot be prevented, there are several precautions that minimize their effects, Mr. Shenon added. Filling abandoned excavations with sand, gravel or mine waste prevents setting up complicated stress patterns in the earth which lead to rock bursts. Certain methods of mining also make their effects less serious. Extra care in setting supports also is important.

How radio communications have improved safety and increased efficiency in underground iron ore mines was described by E. D. Cory, chief electrical engineer of the Cleveland-Cliffs Co.

Coal mines have used radio for some time, but only in the last couple of years has equipment been perfected that overcomes interference in metal mines. In addition to the greater production efficiency made possible by radio, it provides rapid communication in case of emergency. Fires, falls and injuries can be reported quickly and equipment and trained personnel moved to the scene in a matter of minutes.

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Lumbering and Construction

Logging is still the most hazardous occupation in the United States. W. E. McCraw, special representative of the Caterpillar Tractor Co., said accidents occur about 4.5 times more frequently in logging than the average for all industries and, in lost time, they're 4.7 times more severe.

"Even though the men in logging operations are exposed to greater hazards than the average, our work injury rates are truly appalling in their frequency," Mr. McCraw stated. "Plotted graphically, only logging and highway construction show an upward trend for the past 5 years, while the all-industries rate is slightly decreasing."

Over 77 percent of accidents in logging are caused by the human element. "Crew training is the solution," Mr. McCraw said. "A crew well trained in safe practices is a cash asset, as compensation premiums are based largely on the accident experience of each company."

Paul Bunyan wasn't the only big thing to come out of the forest. The safety problem is even bigger, reports J. Kenneth Pearce, professor of logging engineering at the University of Washington college of forestry. Probably the biggest hazard to be overcome is mental, he said. Logging is accepted as a dangerous occupation by the men in it who are prone to say, "What's the use of talking safety?"

Professor Pearce cited records, however, which prove there's much to be gained by talking safety. In 1951, member companies of the Western Forest Products Safety Conference logged 17.6 million manhours in the extremely hazardous Douglas Fir region while reporting an average injury frequency rate one-half that of the industry as a whole. One award-winning company had a frequency rate 1/14th of the industry average. Besides

changing the loggers attitude, safety must be engineered into the planning, layout and construction of the logging operation, he said. For example, roads must be located and planned with safety as well as transportation costs in mind. Slight distance, turnout spacing, grades suited to braking performance of log trucks and spacing of curves are safety features which can be engineered into roads.

As engineers plan the design of any structure for safety, contractors must plan the elements that will make its construction safe, declared Dale Medsker, area supervisor of the safety engineering department, National Surety Corp. Application of engineering principles to construction work involves 3 simple steps, Mr. Medsker explained.

"First, contractors must plan their jobs in every detail and make safety a part of the plan. Second, work must be performed in accord with sound engineering principles. Third, failures and accidents must be analyzed so corrective action can be taken."

Enforcement of safe practices in building construction is particularly difficult, Erwin N. Ziner, safety engineer of the John A. Volpe Construction Co., declared, because of hand-me-down construction habits, prejudice against safety equipment, and the fact that few contractors have an organized accident prevention program. Transient workers also provide difficulties.

The lack of teeth in any enforcement program has been overcome in his own company, he said, by a bonus system in which large sums are given to superintendents and foremen who maintain the best records. Lack of pre-employment physical examinations was cited as probably the most important difficulty. Mr. Ziner urged both management and labor groups to establish basic standards.

Paper and Materials Handling

The tremendous safety gains in the paper industry since the advent of organized accident prevention 30 years ago were summarized by D. C. Everest, chairman of the board of Marathon Corp., in one of several sessions of the Pulp and Paper section of the Congress. Mr. Everest cited a 75 percent decrease in number of accidents, and an average decrease of approximately 52 percent in insurance rates of the 4 basic classifications of the industry.

Safety tips about ladders were offered by Henry G. Lamb, safety engineer of the American Standards Association, while he explained the highlights of the new safety code for portable wood ladders.

A 28-foot extension ladder is needed in order to reach a window 24 feet above the ground. Why the extra 4 feet? Well, the minimum overlap of the two ladder sections must be at least 3 feet, and the base of the ladder must be one-fourth its length from the wall, using up another foot. A wooden ladder should be purchased unpainted, so you can see cracks, checks, pitch pockets and other defects. You can paint it once you're satisfied it's okay. The Code Committee refused to approve a standard for a cheap stepladder for home use only, Mr. Lamb said, "because a 200-pound man or woman in the home probably needed just as strong a stepladder as a 200-pound employee in a factory."

A non-destructive method of testing wire ropes used for hoisting in mines, for elevators and for overhead cableways was described by P. E. Cavanaugh, assistant director of the Ontario Research Foundation's department of engineering and metallurgy. He said the instrument has been undergoing extensive field tests. It shows up magnetic differences in wire rope before and after it has undergone stress.

Railroads and Communication

Since 1888, when statistics first were kept, the railroads have progressed steadily in improving safety conditions for employees, Lynne L. White, president of the Nickel Plate Road told the Congress. In 1922, 1,657 employees were killed and 117,197 injured. In 1952, the best year the railroads have ever had in safety, "not a single passenger was killed in a train wreck," Mr. White declared. The 352 employee fatalities and 20,536 injuries represent a better than 75 percent improvement in the casualty rate since 1922.

How a safe worker is developed on one railroad was described by A. V. Swift, special representative of the Michigan Central Railroad.

New employees are first grounded in the important safety rules of the company. Then they are familiarized with actual equipment in the car shop. Practical experience in the switching yard is the next phase of training. Yardmasters make regular reports on the progress of the men after they are assigned to a job. The safety director corrects unsafe practices or attitudes that may be observed. Every man is encouraged to attend weekly safety meetings to keep up with the latest procedures, and each employee receives a monthly letter from the superintendent in which accidents are reported and analyzed.

The communications industry has the best safety record in the nation, the Congress was told by E. E. Wyland, assistant vice president in charge of personnel of the Mountain States Telephone & Telegraph Co. Communications lost .10 of a day per thousand man-hours worked last year, while industry as a whole lost .68. Its frequency rate was 1.61 lost-time injuries per million man-hours, while the all-industry average was 8.40.

Safety is made a personal thing in the communications industry. It is its own reward to the person himself, his family and the people around him, Mr. Wyland said. Making the correct and safe way of performing work a habit is another important asset to accident prevention. When hazardous situations arise that demand split-second decisions, a better chance for safety is created if the right thing is done automatically out of habit. Varying the approach and the incentive, and changing the appearance to attract attention, are other things that add to the effectiveness of the safety program.

Pocketbooks and Etiquette Share Spotlight At Congress Transport Safety Sessions

How to make traffic and transportation safe occupied many sessions of the National Safety Congress. Many plans and solutions were put forward.

The "pocketbook nerves" of motorists must be pinched before they will be galvanized into safer driving habits, according to Marion E. Martin, Maine commissioner of labor and industry.

"All over the country the drivers' insurance has been increasing in cost," she said, "but as yet I have not seen a brochure, or a write-up in a newspaper, explaining that the increase in rates has been due to the increased number of accidents. Observance of the law isn't due entirely to fear of the police, but is due to the pocketbook being affected by fines for speeding, and other violations. The 'pocketbook nerve' should be appealed to."

Miss Martin said appeals for traffic safety support have been made on a sound psychological basis of self-preservation and humanitarianism, but they have reached a plateau. People are nearly satiated with the old slogans. There must be additional approaches, she continued. Miss Martin charged that too much time has been spent in arousing opinion and too little in follow-through, giving groups, organizations and individuals detailed directions on how to assess and correct the problems.

"There are many civic groups which are ready and anxious to make constructive contributions, but they actually do not know where to begin," she said. "They need leadership rather than flag waving—know-how rather than emotional appeals. Why are they not furnished it?"

The traffic jam is creating a sticky situation in industrial areas. So, plant officials must cooperate with traffic authorities to minimize quitting-time congestion, according to J. W. Broxterman, safety and insurance supervisor for Schenley Distillers. He said "the first step in planning a smooth, safe traffic flow system for access roads and parking lots is an analysis of existing conditions, roadways and parking areas and the demand."

Some common causes of traffic congestion around plants are insufficient sidewalks, crosswalks, loading zones and other means of separating pedestrian traffic from vehicles. Blocking of traffic exits by freight cars on railroad sidings and grade crossings during critical shift changes slows up traffic. Continuous left turning of vehicles from parking lots across heavy traffic streams often can be eliminated by rerouting. Inadequate controls at adjacent intersections may be causing unusual delay in starting and stopping traffic.

Plant officials should know the number of employees needing car space and plan accordingly, Mr. Broxterman stated. Boundaries and dimensions of all parking areas should be surveyed for proper exit and entrance. Directional signs and markings to facilitate loading and emptying parking areas should be installed where needed. Besides being a nuisance and causing accidents, improper traffic facilities around plants may be a menace to public safety. In the event of fire or other catastrophe, emergency vehicles could be obstructed.

Commercial Vehicles

Truck drivers are reading Emily Post to learn more about their jobs. This was revealed by J. W. Jacobson, director of the accident control division, F. J. Boutell Driveaway Co. He said drivers for his company are given copies of "Motor Manners," the blue book of traffic etiquette written by Emily Post, as part of an intensive driver selection and training program. Mr. Jacobson said this program is altering the old idea that "all a truck driver requires is a strong back and a tough seat."

Although truck drivers are on their own most of the time, they sometimes have a company supervisor keeping tabs on their driving habits, according to F. S. Lake, director of safety for the Interstate Motor Freight System. A "constructive" type of patrol is maintained in which the driver is observed without his knowledge by a supervisor in an unidentified car. The only reason for this type of patrol is the prevention of accidents, by learning drivers' bad

(Continued on next page)

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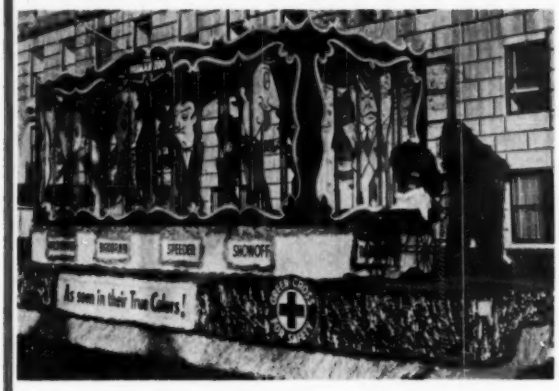


Gorilla is safe outside with baby as wild drivers are locked behind bars on this driving safety float from the second annual New York Safety Parade.

Devil explains to the parade watchers why he and his comrades are tormenting their victim. He killed someone when drunk at the wheel. Float was one of many featuring the parade which also included 3,000 marchers.

THE crowds cheered, the bands played, the flags waved, and the stately floats rolled by. For two and a half hours marchers moved down New York City's Fifth Avenue. It was at the same time a gay yet sober parade. It was a tribute to safety—the attempt to save lives by the simple expedient of using—care.

Officially, the parade bore the title—Second Annual New York Green Cross Safety Parade, and arrangements had been going on for many months before the 3 thousand marchers swung out into the brilliant fall sunshine.

First, came the mounted police and contingents from the city's fire and sanitation departments. The Army, Navy and Air Force paid their respects to safety next. Then Post Office Department trucks went by, driven by honor drivers with their miles of safe-driving displayed on the side of their trucks. Floats, depicting the problems of careless and drunken driving, appeared. Health and transit units of the city showed watchers some of their contributions to safety. Public transportation, oil and gas companies, dairy and brewery companies, and railroads were represented as the parade went on. Bands with violins, with drums, with horns, and even with bagpipes strutted, wheeled, and even danced. One whole division of the parade was devoted to civil defense emergency units. These units displayed the latest equipment for fighting the effects of radiation. Interspersed throughout the marching units were floats, some holding the careless ones up to hilarious ridicule, others more seriously depicting the results of their carelessness.

And, lest we forget, there were the children. The ones that marched in the high-school bands, or with their bicycles, or in other organizations; and the ones that watched from the sidelines and laughed at the clowns and waved happily at the drivers of the big "safe" trailer trucks. They had a lot of fun, but they also learned something about safety. So, it can be truly said, did their fathers and mothers.

Top picture: Greater New York Safety Council. Bottom: Staff photo.

Congress Sessions

(Continued from preceding page)

habits and correcting them. The supervisor's job is not all negative, however. Truck drivers often are stopped on the road and complimented for good driving.

Motor fleet operators should take inventory of methods used to select drivers, E. R. Reeves, director of the accident prevention division of the National Automobile Transporters Association, told the Congress.

"Many bills have gone into the hoppers of various state legislatures as a result of poor operation or bad behavior on the part of drivers," he said. Although these drivers are in the minority, he said the public is inclined to remember the faults they observe. The best place to eliminate the potentially bad driver is in the employment office before he is hired, and before he causes trouble.

Accident records and reports are just as important in the control of accidents as cost and sales records are in the control of profit and loss. In these terms, F. W. Moore, safety director of the Mistletoe Express Service, explained the use of accident records in supervising truck fleets.

"In too many cases," he said, "accident records and reports are neatly filed away and seldom dis-

turbed." To be useful, they must be periodically evaluated. Information gathered from them can be used in training and supervision to prevent future accidents.

Two Views on Awards

Give-away programs for commercial drivers do not make good drivers, asserted F. J. Wirken, director of safety and personnel for Interstate Bakeries Corp.

"Operators who expect their men to become accident-free drivers with a $10 reward, a gold watch or a $100 war bond are actually incurring more expense rather than building a sound program for reducing expenses," Mr. Wirken declared. "Standardization is most important and all of us in the trucking industry must realize it so that we can collect uniform statistics which will help eradicate accidents."

Two other speakers had different views on the value of driver cash and premium awards for safety. Thurlow McDonald, director of personnel and safety for the Rochester Transit Co., described an incentive plan in which drivers can win as many prizes as a quiz show contestant by avoiding accidents over a period of years.

Since 1949, company drivers have been awarded household premiums as bonuses for safe operation. The prizes included toasters, power mowers, television sets, etc., each valued according to a system of points. Points are accumulated by drivers for each month of operation without an accident, acts of courtesy and commendations from passengers, company and public officials, and newspapers. Drivers forfeit points when they have an accident, are reported for safety violation or acts of discourtesy or fail to report an accident. Penalties are based on the degree of fault involved on the part of the operator.

A telephone quiz for truck drivers, with awards up to 100 dollars, was described by M. R. Jensen, transportation superintendent of Consolidated Freightways, Inc. He told how the homes of drivers were phoned to determine knowledge of the week's safety slogan—one element of his company's safety program.

Passenger autos crashing into the rear of slower-moving trucks at night have caused more deaths on the New Jersey Turnpike than any other accident type, Charles M. Noble, chief engineer of the New Jersey Turnpike Authority, told the Congress.

"Such accidents, which usually are without any evidence that the motorist applied his brakes, indicate a lack of depth perception," Mr. Noble said. "It is possible that the nonuniformity of truck rear lighting may be at the bottom of these accidents."

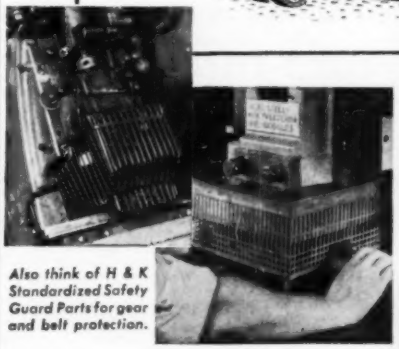
He advocated a national campaign for uniform, reliable and adequate rear lighting of trucks, increasing the candlepower of their lights, providing a signal in the cab which would warn the truck driver of light failure, and locating lights at a height to give uniform arrangement and freedom from mud and snow.

Does getting behind the wheel of a car really change an individual's personality? Definitely not, according to Dr. Alan Canty, psychiatrist of Detroit's Traffic Clinic.

"The chronic traffic violator is a social problem child," Dr. Canty explained. "His traffic misbehavior is but a symptom of his personality maladjustment. The same factors which cause marital unhappiness, divorce and separations, frequent job changes, economic distress and unhealthy recreational activities contribute to his contempt for conventions and chronic defiance of traffic laws."

Motorist and Traffic Problems

Almost 10,000 problem drivers have been examined in the Detroit Traffic Clinic since its establishment in 1936. During this time, about 100 people driving cars in Detroit were found to be committably insane, 850 were feebleminded and



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about 1,000 former inmates of mental hospitals were found to be still not emotionally well enough stabilized to be operating cars. There are many additional problem drivers whose misbehavior can't be thus classified but is still outside the norm. There are impulsive, irresponsible persons and day-dreamers who are preoccupied with thoughts of financial distress, marital discord or business and sex problems while driving. There is also the alcoholic trying to escape reality, and the selfish egocentric who has no regard for the liberties or rights of others. This "world owes me a living" type of driver weaves in and out of traffic and makes others wait until he gets out of their way. "Show offs" are drivers disturbed by feelings of inferiority, Dr. Canty said. They try to compensate by speeding or trying to outwit the police. They attempt to gain status by excelling in the daily driving contest.

"On the basis of years of observation," Dr. Canty said, "it is a safe conclusion that there are many mental, intellectual and emotional misfits driving cars on our streets and highways. If the automobile had never been invented, most of our violations-prone drivers would still be recognizable as problem children in our society. Driving just gives them the opportunity to demonstrate the presence of unsocial, irresponsible or even antisocial traits."

Drivers are referred to the Detroit clinic by traffic judges and license examiners. They are given a battery of psychophysical tests, an intelligence test, and a complete social history is taken. From the results, the clinic staff makes a diagnosis and sends a written report to the judge or agency that referred the case.

Law and Traffic

The law is doing about as well at preventing auto wrecks as it is in preventing wrecked homes, declared Sidney J. Williams, chairman of the National Committee on Uniform Traffic Laws and Ordinances. "Substantial uniformity" is being reached in practically all areas of vehicle legal control, claims Mr. Williams. As he put it, "marriage is a much older institution than the automobile, yet look at the crazy quilt of marriage and divorce laws. In contrast, within a quarter century, most of the states have achieved substantial if not literal uniformity on most of the traffic items where uniformity is important."

Mr. Williams said that present model traffic codes are constantly being revised to keep up with changing conditions. He cited a recent New York law which lowered by one year the minimum driving age for persons who have completed an accredited driver training course. If this law stands the test of experience, he said, it will be incorporated into the Uniform Vehicle Code. He pointed out that it was an excellent way to promote universal driver training in high schools.

The committee chairman deplored a trend in recent legislation to go back to absolute speed limits. Regulations representing most accurately what the skillful, prudent driver would do under particular circumstances, called "prima facie" limits in the Code, are the proper basis for any speed laws, he said.

One-Way Streets

The results of a study made in Richmond, Va., where one-way streets have been in effect for 4 years, were reported by John T. Hanna, city traffic engineer.

Mr. Hanna described the success of the one-way Traffic System. It is now more popular with residents and motorists than when it was begun. One-way streets show increased property valuation. One-way commercial streets show sales volume increases. Public transportation facilities show better running time on one-way streets. More traffic is handled, but accident rates decline on one-way streets. The parking problem is improved.

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SAFETY ACHIEVEMENTS

HOW did one company with an accident frequency rate of 98.5 per million man-hours in 1949 lower it to 7.9 in 1952? The story of how training accomplished this remarkable reversal is recounted by Joseph Plasky, training and safety director of the Red Jacket Coal Corp.

Citing U. S. Bureau of Mines statistics that 89 percent of accidents in coal mines are due to human failure, he says, "this being the case, it is logical that safety training is a major factor in any accident prevention program. By increasing understanding, safety training performs a double role," Mr. Plasky explained, "it not only decreases accidents, it also reduces production costs."

ACCIDENTS in chemical plants of member firms of the Manufacturing Chemists' Association were reduced by 12 percent during the first 8 months of 1953 as compared with the corresponding period of 1952. Alexander J. Wuertz, secretary of the general safety committee of the Association, attributes the reduction in accidents to three factors: alertness and personal participation of top management in safety programs, assignment of better trained safety supervisors, and stepped-up education programs.

Since the general safety committee was established, there has been united effort of top chemical management to promote safety programs. That effort has paid off, Mr. Wuertz said, for the chemical industry now has an outstanding safety record. He went on to describe the attributes of a good safety supervisor: alertness of mind and keen perception of potential hazards. The supervisor must command the confidence of plant manager and supervisory staff as well as the respect of the worker. He must be vested with sufficient authority to promulgate and enforce the program.

Management cannot rest on its laurels once a safety program is adopted, cautioned Mr. Wuertz. Emphasis must be placed on continuity. In educating employees to be safety-minded, it is necessary to guard against prodding, scaring, or frightening the worker. Sometimes these methods are the inevitable result of over-complicated safety rules. Granted that safety rules are of the utmost importance, it is essential for each employee to understand that rules exist to guide and protect him.

A SAFETY record of more than 4 and one-third million man-hours without a major injury compiled last year at the Louisville plant of the American Radiator and Standard Sanitary Co., would never have been possible without every one of the plant's 1,500 workers "getting into the act." Safety director, P. J. Muntan, says everybody is given an active role in the safety program—employees, supervisors and managers. Plans are formulated and enforced by these groups.

THE National Safety Council's Safety Award for the effective promotion of safety in small business has been won by the Institute of Industrial Launderers. The award was presented by Ned H. Dearborn, President of the Safety Council at a special ceremony during the National Safety Congress.

The award gives recognition to associations for the general excellence of their safety services and for their contribution to the reduction of occupational injuries in their industries.

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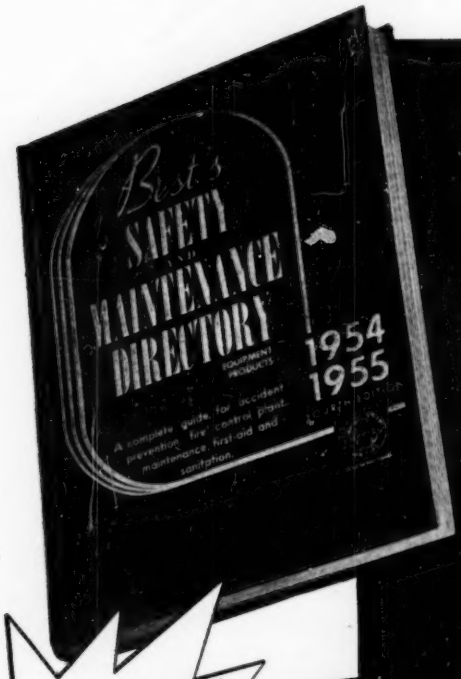

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(For further details, use Key # M-34 on free Inquiry Card on page 73)

What's New . . .

For your convenience in obtaining descriptive literature of products listed here, use the Reader's Inquiry Card. Just write in the code number given with each item. Or send written requests to:

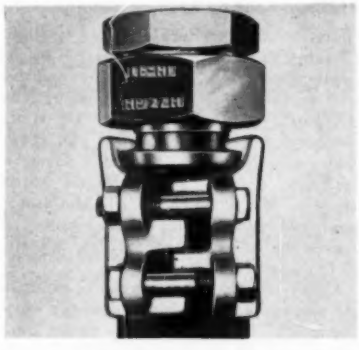
Service Dept.,
SAFETY MAINTENANCE & PRODUCTION

OIL-DISSOLVING SKIN CLEANSER

(Use Key # 878 on Inquiry Card on page 73)

A NEW skin cleanser which dissolves and removes from the skin oil, tar, pitch, grease, kerosene, gasoline, putty, caulking compound, oil-soluble dyes and many other oil-soluble materials has been introduced by Lixoil Laboratories.

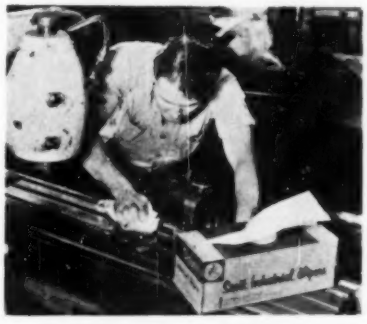
Use of the cleanser is simple. It is rubbed on the skin and mixed with the substance on the skin until all the paint or grease, or other substance has been softened. Then the entire mixture is washed off with lukewarm water. The cleanser is particularly important in stopping dermatitis due to cutting oil or constant use of kerosene or other harsh solvents. In analyzing petroleum oils and their products as leading causes of industrial dermatitis, it was found that only this product, called "Lixoil," would satisfactorily remove all oil from the skin. Several modifications of the cleanser are designed for inks, stains, other solvents and many new products.



HOSE COUPLING

(Use Key # 879 on Inquiry Card on page 73)

A HIGH-PRESSURE hose coupling, designed to meet U. S. Navy requirements, is now on the market from Hose Accessories Company. Available with different types of swivel nuts, this interlocking coupling has been tested under severe pressures and conditions. A continuous steel collar engages the clamp, which is adjustable by means of a nut and bolt arrangement, to provide a firm coupling even under very heavy pressures. The safety coupling is particularly useful for welding hoses, pneumatic drills, steam outlets, air supply equipment, and gas lines.



INDUSTRIAL WIPERS

(Use Key # 880 on Inquiry Card on page 73)

SPECIALLY designed to meet the general wiping needs of industry, a brand-new industrial wiper has just been developed and placed on the market by Scott Paper Company. It is the result of extensive testing and research. The new industrial wiper is clean, strong, safe, and uniform. It also has the advantages of being highly absorbent, versatile, handy, and easily disposable. The product is packaged in a compact size box containing 125 wipers.

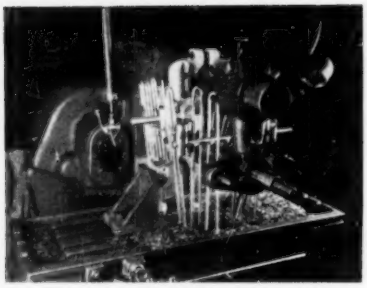
Secret of the wiper lies in its surface. Each wiper consists of two "Perf-Embossed" sheets which, through a special process, are welded together for extra durability, giving thorough cleaning action and maximum dirt retention. Chemical treatment also creates all important wet strength. For the average worker in an industrial plant, the new paper wiper has many advantages since it gives better health protection and helps reduce the employee accident rate. When a clean paper wiper is used, for example, there's no danger of its containing steel shavings, filings, or chips from a previous job. There are also no buttons or foreign matter to scar delicate surfaces, and no rough spots or gaping holes. The spread of dermatitis in a plant is likely to be reduced if the workers have an adequate supply of clean disposable wipers. Statistics show hand wiping constitutes better than 60 percent of all wiping done in an industrial plant. The industrial wiper is fresh and clean and has been specially designed to give efficient performance in the complete range of industrial wiping from heavy machine to precision work.

The compact wiper carton takes up minimum space in a plant and provides employees with an instant and mobile source of wipers. Each box has a "pop-up" feature that makes another wiper automatically available the instant one has been removed from the container. The new wiper is an answer to profit eating practices of industrial wiping plagued by pilferage, shrinkage, attrition, awkward distribution and collection methods, lack of safety and sanitation, and erratic standards of performance.

MACHINE VEST GUARD

(Use Key # 881 on Inquiry Card on page 73)

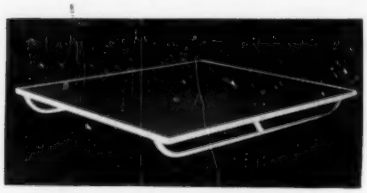
THIS new vest brings safety to the operator of high speed cutting and milling machines. Metal fragments and particles, sometimes projected with terrific force from these machines, are stopped cold by the guard, called the Protecivest. Under actual tests this product of the B. F. McDonald Company stopped a .38 caliber bullet fired from a distance of only 8 feet. The vest is made of laminated glass-cloth. It is light in weight (less than 3 lbs.) and $\frac{1}{8}$ inch thick.



MILLING MACHINE GUARD

(Use Key # 882 on Inquiry Card on page 73)

THE manufacture of the first commercially available milling machine guard for all makes and sizes of production mills is announced by Searjeant Metal Products. The guard is designed to prevent accidental injury on mills due to operator fatigue, caught sleeves, gloves, rings, etc. Adjustable vertical hexagon rods form a barrier around 3 sides of the rotating cutters. They are adjustable for various table settings, to just clear work, straps, jigs, air nozzles, etc. All guards are easily installed with no drilling or tapping required. Each guard is designed to be made smaller or larger to accommodate various jigs, pieces, and cutters. This guard enables operators to work more confidently and change pieces closer to the rotating cutters knowing there is a fixed barrier there to prevent fingers or hands from being pulled into or falling into the rotating cutters. Increased production also results because it is not necessary to stop cutters or turn off mill while changing pieces.



TUBULAR STEEL PALLET

(Use Key # 883 on Inquiry Card on page 73)

AN ALL-PURPOSE, heavy-duty tubular steel pallet, lighter than wood is being placed on the market by the Econoweld Company. Two or more tubular skid runners are welded and braced to a rectangular angle-iron frame which encases a laminated wood deck. The sled-like construction permits easy movement over uneven surfaces and obstructions. Weight is several pounds less than a wood pallet of the same deck dimensions and load potential. Designed for compact stacking and easy handling, the pallet avoids injury from splinters or projecting fastening devices. Experience indicates the product has more than 10 times the serviceable life of wood pallets, and can sustain much greater shocks and centered loads without damage.

NEW ALUMINUM PAINT

(Use Key # 884 on Inquiry Card on page 73)

IT'S now possible to aluminum plate high heat metal surfaces with a brush! Sapolin Paints Inc., announces a new fast drying aluminum paint for plating burners, stoves, hot pipes, oven, radiators, and other metal surfaces. The paint is said to withstand temperatures up to 1200°F without discoloring or blistering. One application prevents rust, cracking or peeling.

This new hard wearing paint contains a combination of fine aluminum and a recently discovered chemical binder. It defies heat because the finish actually fuses with the metal as temperatures are increased. Ready-mixed, it can be applied by brush or spray, drying hard in 30 minutes. The new aluminum paint is available in pint, quart and gallon cans.

SOLVENT EMULSION CLEANER

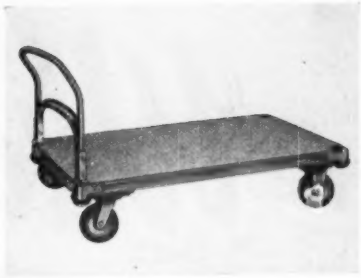
(Use Key # 885 on Inquiry Card on page 73)

CLEANING oils, grease and dirt from metal surfaces is faster, safer, easier and more thorough with Brulinsolv Concentrated Solvent Emulsion Cleaner, announces Brulin and Company. When mixed with low cost solvents such as kerosene, the concentrate steps up the cleaning action of the solvent. The action is much the same as detergent in water. This characteristic permits flushing of the surface with water. The concentrate is safe to use, non-toxic and non-corrosive, and the odor is pleasant. It is free of chlorinated or phenolic compounds. It may be used for cleaning machinery and equipment, office machines and typewriters, aircraft surfaces, painted or unpainted concrete floors, etc., and even for cleaning grease, tar and oil from hands.

MAGNESIUM PLATFORM TRUCK

(Use Key # 886 on Inquiry Card on page 73)

THE introduction of a new, all-magnesium, 4-wheel platform truck for general materials handling use is announced by Magline, Inc. Believed to be the first unit of its kind to be mass-produced of magnesium, the new truck is offered in 10 different models, each weighing only ¼ to ⅓ as much as comparable equipment of similar size. All trucks in the series are capacity rated to handle loads up to 1,000 lbs. All parts are standard and replaceable, thereby lengthening equipment life and reducing maintenance expense. Handles are reversible and may be installed at either end of the platform. The handles are also interchangeable and can be replaced with special racks or superstructures for multi-purpose truck use. According to the manufacturer, the combined advantages of magnesium-lightness and magnesium-strength contribute to greater materials handling efficiency, reduce physical fatigue, and encourage greater productivity.



FIRESAFE STORAGE BINS

(Use Key # 887 on Inquiry Card on page 73)

THE Safeway Storage Bins, manufactured by the J. D. Polis Mfg. Co., are constructed of heavy gauge galvanized iron reinforced throughout by angle iron. An outstanding feature of the bin is the mechanical device controlling the cover. The cover is held open by this device to facilitate use of the materials stored therein. An Underwriters' Laboratories approved fusible link automatically releases the cover in case of fire, allowing it to close tight.

Other construction features eliminate air seepage and provide the proper working height for easier access to all parts of the bin. Built in standard 1, 2 and 3 bale capacities, Safeway Bins are available with legs or casters.

EXTINGUISHING AGENT PROPORTIONER

(Use Key # 888 on Inquiry Card on page 73)

A NEW combination proportioner designed to introduce in proper proportion either a wetting agent or mechanical foam liquid has been developed by the National Foam System, Inc. It permits

the conversion of any engine from water to "wet water" or foam, allowing 3-way fire protection. With the turn of a valve either foam may be generated to snuff out flammable liquid fires, or "wet water" may be supplied where quick, deep penetration is required. At the same time water can be supplied for ordinary fire fighting requirements.

The proportioner is light and easily portable, but also can be permanently mounted on a fire truck. Pick-up can be accomplished by flexible hose direct to the portable liquid containers, or permanent piping can be connected to the existing tanks on the engine. Inlet and discharge outlets are for 1½ inch hose. Made of non-corrosive materials, the entire proportioner can be easily flushed out and cleaned.

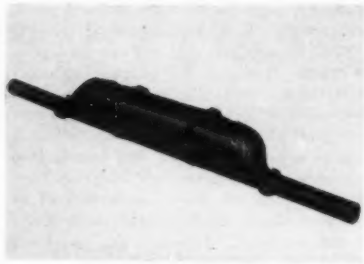
APPROVED DIP TANK

(Use Key # 889 on Inquiry Card on page 73)

A NEW approved foot treadle fire preventive dip tank for washing castings, parts, assemblies and similar moderate size production pieces has been developed by The Protectoseal Company, pioneer manufacturers of production containers and devices for the safe handling of flammable liquids in plant use.

The dip tank is waist high for convenient use without bending and because of its fire preventive construction, it may be placed safely beside the worker or at any other location in the plant where it is most convenient for time saving production. It is made of heavy terne plate electrically seam-welded into a "one-piece" unit. The hinged cover is self-closing and the tank remains covered to protect the cleansing solvent from fire or contamination, and to minimize loss by evaporation. It can only be used while the foot is on the treadle; when pressure is relieved the cover closes quickly. Should a fire occur in the flammable solvent while operator is cleaning parts, the removal of the foot will close the cover and quench the flame instantly.

The tank is 13" wide x 24¾" long x 8¾" deep and stands 33" from the floor. It has a working capacity of 8 gallons of cleaning solvent and is equipped with a drain plug for efficient cleaning and drainage. It is approved by Factory Mutual Fire Insurance Companies Laboratories.



LINEMEN'S SHIELD

(Use Key # 890 on Inquiry Card on page 73)

IN BOTH design and construction of this linemen's shield prime consideration is given to the ease of application and the life-saving features. The shield can be raised quickly, placed in position easily and lowered quickly without waste motion. Only one piece is necessary to completely cover either one or two insulators. The strongest kind of wear-resisting rubber compound is used in the manufacture of the shield to provide maximum resistance against ozone-corona and sunlight. Thicknesses vary from ⅜ in. along the pressure points to 3/16 in. along the flaps, the manufacturer, the Lineman Protector Company reports. The shield's overall length of 48 in. permits it to be fitted over single or multiple insulators on single or double cross arms and insulate the conductor and tie-wires. Some shields are equipped with two straps and non-metallic fastenings to hold them in place. But because the center of gravity is low, the shields cling to wires even though the buckles are not fastened. In submerged water tests, the Marshall shield was guaranteed for 25,000 voltage acceptance.

FOAM SPRAY MAKER

(Use Key # 891 on Inquiry Card on page 73)

A SPRAY-TYPE foam maker, designed to blanket flames with air foam over a wide area all at one time, has been developed by Pyrene Manufacturing Company for overhead protection of medium-sized petroleum and chemical hazards.

The foam maker, generating the fire-fighting foam right at the hazard, is equipped with a cone-shaped spray head which discharges an even pattern. The device is for use in fixed systems, singly or in multiples, indoors or out. The foam spray unit should be located at least four feet above the hazard to obtain full discharge coverage. Coverage ranges from 10 to 20 feet in diameter, depending on the operating pressure, from 30 to 100 P.S.I.

Pyrene stated the foam maker, tested and accepted for general application by the Underwriters' Laboratories, is for protection of oil-filled transformers, pump rooms, loading racks, drip pans, drain boards, sumps, process tanks, oil drilling rigs—and scores of other hazards in petroleum and chemical storage, loading and production areas. Where the hazard is alcohol or any of the other water soluble solvents or where there are mixed petroleum and chemicals hazards, Pyrene recommends the use in a spray-head system of its new alcohol resistant foam, a universal compound good against all flammable liquid fires.

Foam compound can be introduced into the main water line to the foam makers by a proportioning tank, an around-the pump proportioner or a pressure-line inductor. Portable playpipes, supplied through the same lines, can be used to augment the fixed system.

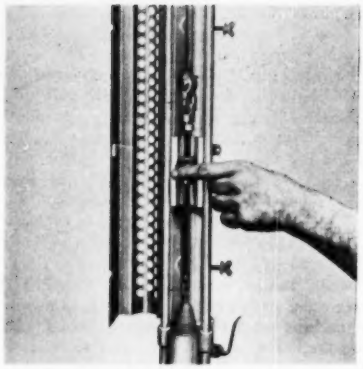
GOWN OF LEAD GLASS FABRIC

(Use Key # 892 on Inquiry Card on page 73)

THE Archer Gown, developed by Dr. V. W. Archer and associates of the University of Virginia Hospital, is made of spun lead glass, and is designed to protect vulnerable parts of the body from x-rays and beta radiation.

It is proving a boon to radiologists, technicians and industrial inspection personnel who, heretofore, have had to depend entirely on lead rubber aprons and risk exposure of arms, shoulders and lower legs to scattered radiation. Other advantages of the Archer Gown are that it is effective in light weights, flexible and strong, chemically resistant, non-deteriorating in storage, non-shrinking, non-allergic and fireproof. Lead glass fabric has many other applications, such as curtains, skin protection, etc.

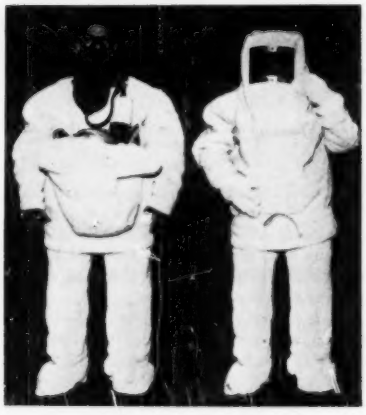
Complete technical information, test reports, charts on ray transmission, etc., are available upon application to the exclusive licensee for fabrication and distribution of Archer lead glass fabric: Bar-Ray Products, Inc.



IMPROVED MACHINE GUARD

(Use Key # 893 on Inquiry Card on page 73)

SEVERAL improvements have been added to the Possons pull-back guard by the manufacturer, Positive Safety Manufacturing Company. The floor level adjustment has been simplified and made more accurate. Simple turning of a conveniently located, knurled nut will adjust finger location. Solid pins with longer life, greater strength, and higher safety are now standard in the ram connection rod. In addition, capped holes prevent placing pins from same side of rod. A hinged guard locks the pull-back cords securely against unauthorized changes, but perforated metal allows rapid and easy inspection of the cords. Also, an attachment to the front of the press is available, from which the operator can hang his hand straps when he leaves the press. Upon his return, his attention is called to replacing them on his hands.

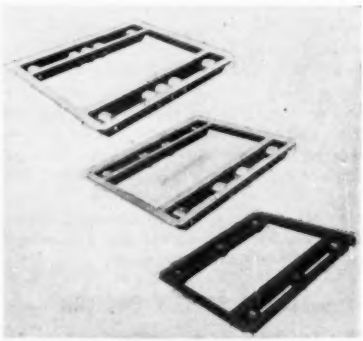


FIRE RESCUE SUIT

(Use Key # 894 on Inquiry Card on page 73)

A NEW fire rescue suit, field tested at temperatures up to 1800° F., has been announced by Industrial Safety Specialties Co., Inc. Known as the ISSCO Fire Rescue Suit, it has demonstrated its effectiveness against pit fires, spill fires, shipboard and aircraft fires—under various conditions. Complete, the suits weighs only 28 lbs., rescue blanket—6 lbs. additional. This light weight, combined with extreme pliability, permits the suit to be donned, without assistance, in less than 1 minute.

Basic construction of the rescue suit is an outer layer of 90 percent asbestos cloth, plus 1 inch of fibre glass insulation covered with aluminum foil, plus an inner lining of vinyl-treated glass cloth which acts as a steam barrier. The suit is also available with "aluminized" outer surface, recommended for work inside boilers or furnaces where direct contact with flame is not involved. Trousers are one-piece and completely cover feet, legs, and lower abdomen up to a point 8" below the arm pits. Legs are wool-lined for additional protection, and "shoe" sections are double thickness throughout. The hooded blouse extends well below the waistline. Hood section contains a large, laminated safety glass window, permitting a wide field of vision. In addition, the hood leaves ample room for the wearing of self-generating breathing apparatus. Breathing apparatus, designed specifically for the suit, is available and provides oxygen for 15 minutes breathing. Gloves have long, wide gauntlets for maximum protection. Blanket is 90 percent asbestos.



NEW PALLET ROLLERS

(Use Key # 895 on Inquiry Card on page 73)

THREE pallet rollers for different jobs have been developed by the Frank L. Robinson Company. Construction is of high tensile strength welded steel. Light weight, low cost and high efficiency are stressed in each.

One type is designed to move a loaded pallet backward or forward and meet the problem of changing large fork-truck loads into small loads and transporting them to trucks for easy shipping arrangement. Skid is placed on pallet roller, load put on skid and loaded pallet roller pushed to destination.

Another kind of pallet roller is called the "Swivel King." It can be turned in any direction and is used for speeding up material flow and product movement. Like other types this pallet roller retains frame parallelism and alignment under all conditions, has large, heavy gauge rolls, and axles which cannot turn to interfere with movement of rollers.

The third variety is designed for movement of loads on slatted flooring as in refrigerator cars, and permits the unit pallet loading and unloading of these cars. This pallet roller is also full directional.

LINEMAN'S SAFETY HAT

(Use Key # 896 on Inquiry Card on page 73)

NOW in use by power line crews is a new lightweight safety hat designed for protection against both heavy mechanical impact and high-voltage shock. The "Shockgard" is molded entirely of a material which, according to the manufacturer, Mine Safety Appliances Company, will protect the wearer against electrical shock up to 10,000 volts in temperatures ranging from 30 degrees below zero to 175 above. The crack-proof one-piece molded plastic shell is smoothly rounded to deflect falling objects and prevent snagging on near-by obstacles. Despite its high dielectric properties and mechanical strength, the hat weighs only 14 ounces.

INDUSTRIAL SAFETY MIRROR

(Use Key # 897 on Inquiry Card on page 73)

THE addition of a new 24" circular convex glass mirror to their line of Klear-Vu Safety Mirrors is announced by Lester L. Brossard Co. This traffic mirror is designed for factories and warehouses where blind corners, cross aisle intersections, entrances and exits present a serious accident problem. Installed at a height of 8' to 10', this mirror reflects the movement of oncoming floor traffic from opposite directions. The mirrors are easily installed and are adjustable to any desired angle. Mirror head is strongly supported with a patented 3" swivel stud assembly and a mounting bracket. 12" and 18" size circular convex mirrors are also available. Two sizes are offered in flat rectangular glass mirrors, 9" x 18" and 16" x 24". The safety mirrors are also adaptable for outdoor use.

FREE BULLETINS & CATALOGS

As a convenience to executives, these new publications of manufacturers are offered by the Reader Service Department of SAFETY MAINTENANCE & PRODUCTION. To obtain copies write in the key numbers on the free-postage card below.

MACHINE GUARDS

Machine Guards 233
Harrington & King Perforating Co. Several different types of machine guards are detailed in this 16-page booklet. Perforated metal and other materials which can be used to construct guards in the user's own plant are also included.

Safety Shield 234
Junkin Safety Appliance Co. This 4-page, 2-color brochure describes a shatter-proof shield which guards the point of operation on grinding and other types of machines. Lighting, both general and focused on the work, is provided in the shield which will not allow the machine to operate until it is in working position.

Grinding Wheel Guards 235
Morrison Products, Inc. A line of wheel guards for flaring cup and straight cup wheels is the subject of this 4-page, 2-color folder. The guard is designed to protect without cutting down visibility. It revolves with the wheel and is said to be light weight and easy to assemble.

Guide Pin Covers 236
Central Safety Equipment Co. A survey report on the performance of dies equipped with the company's guide pin covers is the principal material in this 4-page bulletin. Safety for both operator and die are claimed for the covers. The report highlights actual results gathered from industry.

Sweep and Barrier Guard 237
Luther Mfg. Co., Inc. A guard which, in normal operation, performs as a barrier guard; but, in an emergency, has a sweep connection that will clear the hand from the danger zone is discussed and illustrated in this 4-page brochure. Foolproof operation is the chief point made concerning the guard.

MEDICAL & HYGIENE PRODUCTS

Respirator 238
Willson Products, Inc. A new respirator, with interchangeable cartridges and filters to protect against organic vapors, different dusts, fumes, paint spray, radioactive dusts and acid gases, is announced in this 1-page, 2-color bulletin. The bulletin states that no additional parts or accessories are needed to change the cartridges or filters.

Fume Collectors 239
Ruemelin Mfg. Co. A 2-line, 4-page folder, this work covers a line of welding fume collectors. The method of disposal is drawing the fumes and heat away at the source by high velocity exhaust hoods, with the fan exhausting outdoors. Portable units, welding cabinets, and other types of fume collectors are included.

Dust Eliminators 240
Schmeig Industries, Inc. Two new vertical rotor wet-type dust and fume collectors are described and illustrated in this 3-color, 4-page bulletin. A combination unit has both a dry pre-cleaner and a cyclonic dust separator combined with high pressure water action. Other liquids may be substituted for water in certain applications.

Throat Lozenges 241
Hynson, Westcott & Dunning, Inc. Anesthetic-antiseptic lozenges are the subject of this 4-page, 2-color brochure. Their effectiveness for relieving throat irritations caused by colds, smoke, hay fever and other health hazards is discussed. The important ingredients and their action are also covered. The fact that the lozenges may be used as often as necessary is also stressed.

Incinerators 242
Godar Incinerator Corp. This 6-page, 2-color folder treats a line of incinerators for different types of waste disposal. Illustrations show different installations suited to varying operations. Both single and double chamber types of furnace are shown. The fact that all burning takes place in the furnace and not in the stack is emphasized.

WELDING PROTECTION

Welding Curtains 243
A. Smith & Son, Inc. Flame and waterproof canvas welding curtains, designed to confine the welding operation to a given area, are discussed in this 4-page, 2-color bulletin. Eyelets permit attachment by hooks or cords for placement. Salvage covers, used to protect equipment from water, dust and snow are also covered.

Protective Clothing 244
Safety Clothing & Equipment Co. All types of welding protections from electrode holders, sweatbands, welding curtains, carriers, and cover glass case to welder's overalls, leggings, spats, aprons, jackets, gloves and sleeves, are described and illustrated in this 6-page, 2-color brochure.

Resistance Welding 245
Ampco Metal, Inc. Included in this 24-page, 2-color catalog are newly designed tips and holders for welders. Full information is given about holders, tips, welder wheels, welder shafts and bushings, and flash, butt, barrel and projection welding dies. Reference tables and comparative charts giving physical properties, applications and other specifications appear in the literature.

MATERIALS-HANDLING EQUIPMENT

Exhaust Purifier 246
Oxy-Catalyst, Inc. A catalytic exhaust, a device for removing carbon dioxide to permit the safe indoor operation of gasoline engines, is illustrated and described in this 4-page folder. The exhaust is available installed on new equipment or can replace present mufflers without difficulty.

Lightweight Handling Equipment 247
Tobey Mfg. Corp. A catalog, covering a complete line of handling trucks made of aluminum, A-frames, tote boxes, work tables, and stock racks, this literature discusses the flexibility, light weight and long life qualities of the equipment. Among other features emphasis is laid on roller bearing casters.

Handling Equipment 248
Barrett-Cravens Co. A comprehensive line of equipment for "floor level" handling of materials is presented in this 100-page illustrated catalog. Pocket-size, the catalog contains information on fork trucks, high lift electric trucks, pallet trucks, industrial tractors, electric and hand lift trucks, steeleg skids, semi-live skids, lifters, portable and industrial elevators, cranes, stacking frames, storage racks, lifting and die tables, hand trucks, and handling specialties.

ELECTRICAL EQUIPMENT

Toggle Switches 249
Minneapolis-Honeywell Regulator Co. This new 8-page, 2-color catalog on toggle switches and toggle switch assemblies covers uses, specifications, and other data on the company's line of this type of switch. Design drawings, illustrations, electrical ratings, and informational charts are given for sealed, subminiature, multi-unit, and single-pole switches.

Plugs and Receptacles 250
The Pyle-National Co. Discussed in this 4-page, 2-color bulletin are plugs and receptacles for industrial tools, power, lighting, remote control, sound, communication, instruments, and portable electrical equipment. A sectional view of the basic plug highlights a break down of illustrated types for particular uses.

Electrical Fittings 251
Buchanan Electrical Products Corp. This literature devotes 12 pages to describing the manufacturer's line of solderless wire connectors, cable and conduit fittings, and wiring devices. Complete specifications, dimensional data, application instructions, and descriptive illustrations are included.

BUILDING MAINTENANCE

Acousti-Luminous Ceilings 252
Luminous Ceilings, Inc. An 8-page, 2-color, illustrated brochure on sound-proof luminous ceilings, this material discusses the combination of uses of the ceilings. They are reported to combine the qualities of a louver, a ceiling structure, and sound controller. No glare, diffusion, equal intensity, acoustical correction, mechanically washable, low cost and covering for sprinklers, ducts, and ceiling pipes are other features.

Scaffolding 253
Hagan Tubular Products. This 4-page, 2-color folder deals with a scaffolding which can be fitted to many uses. It can be put up and taken down rapidly. Important features are steel pins which hold the scaffold together and racking which permits the scaffold to be fitted to varying size spaces.

Floor Wiring Duct 254
Winders & Geist. Subject of this 4-page, 2-color bulletin is a rubber floor duct for electrical and

(Continued on next page)

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telephone wiring. Illustrations show various components designed to fit differing circumstances of use. Qualities emphasized include quick and easy installation, complete protection, various sizes, and versatility.

Fiber Glass Plastic 255
Libbey-Owens Ford Glass Co. Results of extensive tests of the wet-strength of chemically treated fiber-glass-reinforced plastics are announced in this 8-page, 2-color booklet. The fiber glass was found to laminate perfectly to the plastic for use in awnings, canopies, and other structural applications. Properties of the laminated product are listed and charted.

Floor Seal 256
Huntington Laboratories, Inc. A wood seal which protects wood floors from dirt and water damage is the subject of this 6-page, 2-color booklet. Easy to apply, the sealer is available for different jobs in different forms, including enamel.

MISCELLANEOUS

Dry-Chemical Extinguisher 257
Ansul Chemical Co. An 8-page bulletin, this literature describes the results of tests to determine the suitability of dry chemical fire extinguishing equipment on natural gas fires. This type of equipment was found to be suitable in many cases, and the bulletin describes how and where. Protective clothing is also discussed.

Electric Signalling Devices 258
Partrick & Wilkins Co. This 50-page catalog illustrates and discusses an entire line of industrial bells, fire alarms, burglar alarms, telephones, communication systems, lamp annunciators, transformers, relays and push-buttons. Specifications are given in most cases.

Safety Directory 259
Alfred M. Best Co. Subject of this 3-color, 4-page bulletin is a directory and guide for accident prevention, fire, control, plant maintenance, first-aid, sanitation and other industrial hygiene and safety products. The directory lists, classifies, describes and illustrates the products and tells which to use, when to use them, how to use them, and where to buy them.

Safety Awards 260
Williams Jewelry & Mfg. Co. Plaques, medals, and badges for various industrial fields are illustrated and described in this 4-page brochure. Identification badges are featured. Awards for good housekeeping as well as safety are contained in the literature.

Award Systems 261
The Metal Arts Co. Service and safety award systems are outlined and discussed in this 8-page booklet. Questions as to cost, size and importance are raised and answered. Designs are suggested and the operation of the program is explained.

Gamma Ray Protection 262
Technical Operations, Inc. Sixteen pages of pictures, drawings, graphs and text are used in this catalog to explain the value of protective equipment and devices against gamma rays. Included are shields, instruments, film badges, a training program, and shipping and storing containers.

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